

conical teeth; mandibular teeth turned outwards, in a single series; maxillary concealed under the præorbital when the mouth is closed. A large papillose pad on each side of the pharynx, between the gills. Dorsal with 14 or 15 spines, anal with 3.

The following papers were read:—

1. On a Collection of Insects and Arachnids made in 1895 and 1897, by Mr. C. V. A. Peel, F.Z.S., in Somaliland, with Descriptions of new Species. By C. V. A. PEEL, F.Z.S., E. E. AUSTEN, F. A. DIXEY, M.A., M.D., HERBERT DRUCE, F.L.S., F.Z.S., C. J. GAHAN, M.A., GILBERT J. ARROW, R. McLACHLAN, F.R.S., MALCOLM BURR, F.Z.S., and R. I. Pocock.

[Received November 9, 1899.]

(Plates I.–IV.)

CONTENTS.

	Page
1. Narrative of the Expeditions. By C. V. A. PEEL, F.Z.S.	4
2. Diptera. By E. E. AUSTEN	7
3. Lepidoptera Rhopalocera. By F. A. DIXEY, M.A., M.D.	10
4. Lepidoptera Heterocera. By HERBERT DRUCE, F.Z.S., F.L.S.	17
5. Coleoptera. By C. J. GAHAN, M.A., and GILBERT J. ARROW...	21
6. Neuroptera. By R. McLACHLAN, F.R.S.	34
7. Orthoptera. By MALCOLM BURR, F.Z.S., and Dr. C. BRUNNER v. WATTENWYL	35
8. Insects of other Orders. By various Contributors.....	46
9. Chilopoda and Arachnida. By R. I. Pocock	48
10. General List of the Scorpions of Somaliland and the Boran Country. By R. I. Pocock	55
11. Explanation of the Plates	63

1. NARRATIVE OF THE EXPEDITIONS.

By C. V. A. PEEL, F.Z.S., F.R.G.S.

(First expedition to Somaliland. April 16 to August 7, 1895.)

Somaliland has always been known as the big-game hunter's paradise, and in consequence but few have had the energy to collect insects as well. Mr. E. Lort Phillips and Dr. Donaldson Smith, however, are notable exceptions. I always kept a killing-bottle in my tent and also collected outside whatever I happened to meet, but I must honestly confess that I never devoted my time seriously to collecting insects. Owing to the great sameness of thorn-bush and undergrowth, the Lepidoptera of Somaliland are disappointing. The Butterflies are few and somewhat uninteresting,

and the Moths are very local. The latter were nearly all collected on the banks of river-beds where there were trees, long grass, and undergrowth. The Beetles, on the other hand, simply swarmed, and there was also no lack of Orthoptera, Chilopoda, Diplopoda, Arachnida, &c.

On April 20th, 1895, I started from Berbera, the coast town of Somaliland, wending my way south-west along the maritime plain to Hargaisa. Insect-life was by no means plentiful in this hot parched-up desert country, but birds were numerous by the sides of the dried-up river-beds.

Hargaisa is a permanent Somali village on a gentle slope, overlooking a river-bed. There was luxuriant undergrowth and a few trees. Insect-life was consequently more plentiful, and I collected my first butterflies and moths here. Of the latter, the large species *Cylogramma latona* Cr. and *Sphingomorpha chlorea* Cr. came to my lantern in great quantities at night. After leaving Hargaisa, I went south across the great waterless Haud District, through dense thorn-bush jungle. *En route* we suddenly emerged upon the Bun Saylah, a large open plain literally covered with game, notably Oryx, Hartebeest, Sæmmerring's Gazelle, and Ostriches. It took us a day to cross this, and then we entered dense jungle again. All this time I did but little insect-collecting, as, owing to the scarcity of water, I was always on the quick march. At Sassabanah we encountered water in deep wells and under the surface of a river-bed, the Webbi Jerrar. Here I collected some of the ticks described. Thence I marched to the Boorgha Country, and passed the everlasting red sand, entering a stony, hilly district. In this latter, Orthoptera were very numerous. I went as far as Mount Kuldush, marching along the Webbi Shebeyli, the great river of Somaliland.

The banks of this river were lined with trees and dense jungle, and butterflies and other insects were very abundant. Being unable to find a path for the camels down to the river-edge, and as I was running short of food, and many of my men had fever, I retraced my steps at the end of June. I followed the Sule River for a long way and reached Bun Jijjiga, a gigantic plain at the foot of the Harah Hills. Here I fell in with Abyssinians, who, however, behaved most cordially. Game was extremely abundant on this plain; but insects were somewhat scarce except at Whardi Datal, where there was long grass, in which Orthoptera simply swarmed. After leaving the plain I traversed thick jungle until reaching Hargaisa, where I rested to take up water before recrossing the great maritime plain called Gubau (the hot country).

During this latter journey I came across a small herd of the Somali Wild Ass (*Equus somalicus*), and passed through a dense locust-cloud, which darkened the sun for hours and looked like a great fall of snow, the air being *white* with them. After a very exhausting march through this desert, where we encountered terrific dust-storms every day, we finally returned to Berbera and the coast.

(Second expedition. June 5th to October 29th, 1897.)

Being anxious to continue my researches in the Natural History of Somaliland, and if possible to cross the Ganana River and explore Lake Rudolph, I set out from Berbera again in 1897, accompanied by Mr. J. Bennett-Stanford, F.Z.S., and his wife. We took with us a very large caravan of camels and escort. We crossed the great Gulis Range of mountains by the Gerato Pass, and encamping at Lehello, there awaited more camels, which were being bought for us in Berbera. Lehello lay in stony ground by the everlasting dried-up river-bed. Here insect-life was fairly abundant, as will be seen from a perusal of the subsequent parts of this memoir.

We removed next to the Toyo Plain, a vast open space devoid of trees, and then crossing the waterless Haud District reached the wells of Farfanyer in Ogaden. Here we were overtaken by a messenger from the political officer at the coast, forbidding us to go to the Ganana River, as the Somalis were reported to be fighting the Abyssinians there. This was a great disappointment to us, after getting together such a large caravan and escort. At Farfanyer we fell in with a great number of Somalis armed with rifles, which they had looted from the Abyssinians, whom they had defeated in two battles on the Webbi Shebeyli. At Farfanyer Mr. and Mrs. Stanford stayed, looking for rhinoceros, whilst I, with my separate caravan, went in search of a reported lion. Eventually I lost the Stanfords altogether, and although I sent guides to look for them, it was of no use, owing to the denseness of the bush. I had a very bad attack of fever, and after waiting for over a fortnight to try and get news of my friends, or to get a guide to take me back, I was obliged to give it up and march on alone.

Hearing of elephants in the Marehan and Haweea Countries, I determined to explore this little-known territory, and so marched across the great Marehan Desert and reached Habr Heshi, where we at length found water. Here I shot a fine lion which charged me, but I managed by great good luck to stop the animal when it was within a few yards.

After leaving Habr Heshi we encountered stony barren country, and pitched camp at Sinnadogho in the Haweea country, where there were fresh tracks of elephants. Here the natives were extremely troublesome, and I had a very anxious time. Several of my rifles, cloth for barter, and a pony were looted from me, and my followers were frequently attacked. I marched to Joh, the furthest point south-east I was destined to reach. We were then about six days' distance from the east coast. Finding no elephants, I went on to Kadea, looting on the way a pony in exchange for the one taken from me. Upwards of five hundred armed men made their appearance at this point, and I thought we were in for a big fight, some of the young men dancing themselves into a perfect frenzy. I was obliged to fire over their heads, to keep them from looting my camels. They succeeded, however, in stealing some

rifles, and I was obliged to take out my little army twice against villagers; but luckily no blood was shed, as the villagers, seeing the rifles coming, immediately restored my stolen property. I did not collect to speak of here, as I was ill with fever and was having a very anxious time. I could get no guide to take me across the great waterless desert of the Marehan, and was obliged to load up the water-vessels at Doosa Moreb and start without one. I believe I was the first white man to visit the heart of the Marehan and Haweea Countries, and was right glad to shake off the dust from my feet on quitting those inhospitable tribes. How I lost my way crossing the Marehan Desert, ran short of water, and all but died of thirst, I have already described in the pages of the 'Wide World Magazine.' We reached Galadi in the Mijertain Country, and found water in the very nick of time, when I was almost at the last gasp. Here I became delirious, and knew nothing that was going on around me for hours. After leaving Galadi I became so ill and weak with fever that I did no further collecting, but was practically carried by my pony the whole way across the waterless Hand again to the Gulis Range, where I remained a few days to rest, and at length reached Berbera more dead than alive.

A full account of my two expeditions, together with a complete list of every mammal and bird known to inhabit the country, will be found in my book 'Somaliland,' published in 1899 by Messrs. F. E. Robinson & Co., London.

The specimens mentioned and described in the following pages are in the Hope Collection, University Museum, Oxford, with the exception of those which are expressly stated to be in the British Museum.

2. DIPTERA.

By E. E. AUSTEN, Zoological Department, British Museum.

Mr. Peel's collection of Diptera was not extensive, amounting only to four specimens belonging to three species, one of which, however, is apparently new.

Fam. TABANIDÆ.

Subfam. PANGONINÆ.

PANGONIA Latr.

PANGONIA (*sens. strict.*) Rond.

PANGONIA TRICOLOR, sp. n. (Plate I. fig. 8.)

♀. Length 17 millim.; length of wing 15.5 millim.; length of proboscis 4 millim.

Shining black; first and second segments of abdomen (except a somewhat triangular area in the middle of the second segment, which, however, like the first and remainder of the second segment, is clothed with appressed silvery-white pile) white above; sixth and seventh segments and the narrow posterior margin of the fifth ochraceous, and

clothed with golden ochraceous pile; wings dark brown; alula, greater portion of the area behind the sixth longitudinal vein, and sometimes a narrow margin extending from the tip of the second vein to the apex of the anal cell, hyaline.

Head with an area surrounding the bases of the antennæ, extending from eye to eye, and including the lowest third of the front and an equal space below the antennæ, covered with white dust; face on each side below the antenna sparsely clothed with fine silvery hairs; cheeks dark brown; occiput covered with greyish dust, and base of head below thickly clothed with short white hairs; antennæ uniformly black, a distinct shoulder at the base of the third joint above. Thorax with a few short golden hairs in front of scutellum; pectus clothed with silvery-white pile, which extends on to the pleuræ above the front coxæ, and also in a stripe running up to the base of the wing, where the stripe ends in a fork; a narrow stripe of silvery-white pile extends from the base of the scutellum to the wing on each side. Abdomen: the white posterior margin of the second segment is narrowed in the middle above (thus leaving the black triangular area mentioned in the diagnosis), and continued on the ventral side as a narrow transverse band. Legs: coxæ greyish pollinose, and clothed with silvery-white pile; tibiæ with a slight reddish tinge. Wings with a fleck of silvery-white pile on the base of the first vein; halteres tawny.

Two specimens (both ♀). Type in British Museum; co-type in Hope Museum, Oxford. From Bun Feroli, north of Shebeyli River, West Somaliland; June 10–20, 1895: "biting men and animals."

In the present species the eyes are bare and the first posterior cell of the wing is closed; it is therefore a true *Pangonia* in Rondani's restricted sense.

Pangonia tricolor is closely allied to *P. bricchettii* Bezzi (Ann. Mus. Civ. Genov. xxxii. (1892), p. 181), also from Somaliland (Milmil). *P. tricolor* differs from *P. bricchettii* (which apparently is a somewhat smaller species) *inter alia* in only the first two, and not the first four¹, abdominal segments being marked with white, thus leaving between the white of the base and the ferruginous tip a broad shining black space, which is absent in Bezzi's species.

It may be noted that in the marking of the base of the abdomen of *Pangonia tricolor* there is a certain similarity to *Tabanus leucaspis*, v. d. Wulp (Notes Leyden Mus. vii. (1885), p. 74, pl. v. fig. 3), from the Gold Coast.

The collection of the British Museum contains two specimens of *Pangonia tricolor*, obtained by Capt. Swayne in Somaliland, from

¹ There is a discrepancy between Bezzi's diagnosis and his detailed description; in the former he writes (*op. cit.* p. 181) "*abdomine fasciis tribus transversis ex tomento albido ad marginem posticum segmentorum*," while in the latter he describes (p. 182) the fourth segment also as "*a orlatura posteriore bianca*," with the dorsum "*Fornito di peli bianchi*"; he describes the 5th, 6th, and 7th segments as "*a peli ferruginosi*."

nearly the same region as that in which Mr. Peel's specimens were found. Capt. Swayne also captured a single specimen of another species of *Pangonia* (too much damaged for determination), and three examples of a small Tabanid, somewhat resembling a *Hæmatopota* in form, but with clear wings; as the latter specimens are headless, it is impossible to determine them more precisely.

The following extract from a letter from Capt. Swayne, sent along with the flies to Dr. P. L. Sclater, is interesting as showing the apparent effect of the bites of these flies upon domestic animals. It is possible, however, that the real offender in these cases is either *Glossina longipennis*, Corti (the Somaliland Tsetse-fly), or else a species of *Stomoxys*, which abounds all over E. Africa. The latter species was found by Dr. J. W. Gregory to kill his camels on the Tana River, and was discovered by Capt. A. G. Haslam, A.V.D., to carry the *Trypanosoma* of Tsetse-fly disease. Since *Stomoxys* is a fly of small size, while *Glossina longipennis* is in shape not unlike a *Hæmatopota*, the true culprits may escape notice, the effects of their bites being attributed to the Tabanidæ. In the extract from Capt. Swayne's letter the *Pangonia* are called "Doog," and the small Tabanid "Balaad." Capt. Swayne writes as follows:—

"I send you three specimens of 'Doog' (a large fly) and three specimens of 'Balaad' (a small fly). I was very much pestered by 'Doog' on my way through Ojaden to the Webbe Shabeyli in Somaliland. They swarmed on my camels, constantly drawing blood. The other fly, 'Balaad,' which looks not unlike the common house-fly, is far the worst fly on the Webbe; a valuable camel, on which I caught three or four, two months ago, is now dying, and the Somalis say that this is due to the bites of 'Balaad.' If there are many of them they kill horses and camels, and the Somalis will not have their live-stock grazing where 'Doog' and 'Balaad' are found."

Fam. ASILIDÆ.

Subfam. LAPHRINÆ.

LAMYRA Loew.

LAMYRA VORAX Loew.

Lamyra vorax, Loew, Öfvers. af K. Vet.-Akad. Förhandl. 1857, 355. 47; id. Dipt.-Fauna Südafrika's, 114 [1860].

A single ♀, West Somaliland, between April 16 and Aug. 7, 1895.

I refer Mr. Peel's specimen to this species with some hesitation. Its length is 15 German lines, instead of 11 or 12; the pollinose spots on the second and third abdominal segments are practically invisible; and there are differences in the length and coloration of the hair on the ventral surface of the abdomen. The specimen, however, is in poor condition, and even should it eventually prove to belong to a new species, it is too much damaged to be selected as a type.

Fam. MUSCIDÆ.

GLOSSINA Wied.

GLOSSINA LONGIPENNIS Corti.

Glossina longipennis, Corti, Ann. Mus. Civ. Genov. xxxv. (1895) p. 138.

A single ♀, West Somaliland, June 23–25, 1895.

Mr. Peel's note on this specimen says:—"Fly-belt sharply defined from Biernuuddo to Boholo Deno."

This species, which is the Somaliland Tsetse-fly, was described from a male specimen obtained by Capt. Vittorio Bottego in June, 1893, on the Uelmal River, in the Boran Galla country. The British Museum possesses four examples from Somaliland (the exact locality not being known), collected and presented by Mr. Th. Greenfield.

Corti states (*loc. cit.* p. 139) that *G. longipennis* is "related to *G. tachinoides*, Westw., but differs in having the antennæ yellowish and not brown." It is, however, much more closely allied to *G. tabaniformis*, Westw., in which the length and size of the wings are even greater.

3. LEPIDOPTERA RHOPALOCERA.

By F. A. DIXEY, M.A., M.D., Fellow of Wadham College, Oxford.

DANAINÆ.

LIMNAS CHRYSIPPUS Linn.

Twenty-two specimens: 16 ♂, 6 ♀. It is remarkable that not one of these is of the type form, 14 ♂ and 6 ♀ being var. *klugii*, in which the black and white of the apical portion of the fore wing are wanting; while the remaining 2 ♂ are var. *dorippus*, which resembles var. *klugii* in every respect except that both surfaces of the hind wing are more or less suffused with white as in the *alcippoides* form of the type. The dates and places of capture were as follows: Hargaisa (North-west Somaliland), April 25–28, 1895, *klugii*, 4 ♂, 1 ♀, *dorippus*, 1 ♂; Arigumeret, Farfanyer District (Central Somaliland), June 20, 1897, in thick bush, *klugii*, 4 ♂, *dorippus*, 1 ♂; Haud, Odewein (North Central Somaliland), June 23, 1897, in dry river-bed with thickly wooded banks, *klugii*, 1 ♂, 1 ♀; Haud District, Eyk (North Central Somaliland), July 2, 1897, *klugii*, 1 ♂, 1 ♀; Habr Heshi, Marehan Country (East Central Somaliland), Aug. 26, 1897, in thick bush, *klugii*, 4 ♂, 3 ♀.

The ground-colour of the present specimens varies, the majority being of the usual light reddish amber seen in Oriental specimens of the type. Two or three of the *klugii* are of a pale dull fawn, and one or two approach the duller and darker ground-tint of the African *chrysippus*. These differences are not sexual, and there are transitional forms. The marginal white spots of the hind wing

are generally obsolete on the upper surface; they are, however, conspicuous in one of the two *dorippus*. Most of the male *klugii* show a slight powdering of white scales in the neighbourhood of the submedian scent-patch.

In describing the collections made fifteen years ago in Somaliland by Col. Yerbury and Messrs. Thrupp, Lort Phillips, and James (Proc. Zool. Soc. 1885, p. 756), Dr. Butler remarked of *L. klugii*: "This is clearly the prevalent *Limnas* in Somaliland; *L. chrysippus* and *L. alcippus* having, apparently, entirely disappeared, and *L. dorippus* being scarce." The fact that the only specimens of *L. chrysippus* obtained by Mr. Peel in his two distinct visits to Somaliland were of the *klugii* and *dorippus* varieties, confirms the above conclusion. It is also worthy of note that the collection made by Capt. Swayne in the Harar Highlands (Proc. Zool. Soc. 1898, p. 821) contained *L. klugii*, but no specimens of *L. chrysippus*, *L. alcippoides*, or *L. dorippus*.

ACRÆINÆ.

ACRÆA NEOBULE Doubl.

Four specimens: 2 ♂, 2 ♀. Caught at Gonsali (West Somaliland), June 24, 1895.

ACRÆA DOUBLEDAYI Guér.

1 ♀. Gonsali, June 24, 1895.

ACRÆA SERENA Fabr.

3 ♀. Gonsali, June 24, 1895. In one of these specimens the subapical oblique dark bar on the fore wing is well marked, in the other two it is almost or altogether absent. One of the latter has the inner portion of the hind-marginal dark border of the fore wing almost obsolete, except near the apex.

ACRÆA MIRABILIS Butl. (Plate I. fig. 4.)

Acreea mirabilis, Butl. Proc. Zool. Soc. 1885, p. 760, pl. xlvii. fig. 1.

Seven specimens: apparently 5 ♂, 2 ♀. The British Museum possesses five specimens of this interesting *Acreea*, including the types. The present specimens differ from those in the National Collection (one of which retains a violet bloom) in the following particulars:—(1) The upper surface is generally of a warmer chestnut tinge. (2) The paler marks beneath, including the subapical patch of the fore wings, are rich yellow-ochre, instead of being nearly white as in the British Museum examples. In one of the latter, a female, the subapical patch on the upper surface also is creamy white. (3) In the present specimens there is a definite yellow band immediately external to the darker median band of the hind wing beneath. This is not the case in the British Museum examples, where the drab submarginal area gradually pales inwards towards the darker median band. In the ♀ type

this submarginal pale area is somewhat more distinct than in the other British Museum specimens, but it does not reach the condition seen in Mr. Peel's examples. The dated specimens in the National Collection were taken at Bundu Maria, Somaliland, in April. Mr. Peel's were all captured at Aoho, near Hodayu, Ogaden Country, Central Somaliland, on Aug. 20, 1897. The country consisted of stony hills, with thick bush. From the dates it seems probable that the present specimens belong to the wet-season, and the British Museum specimens to the dry-season form of the species.

Nymphaliniæ.

JUNONIA CEBRENE Trim.

Six specimens, all males. Three were captured at Hargaisa, April 25-28, 1895; the other three in the summer of 1897, two bearing the date June 20, and the locality Arigumeret, Farfanyer District. These latter have the underside generally darker and more speckled than the spring examples; this is less apparent in the third specimen, from Central or East Somaliland, June 5-Oct. 29, 1897.

JUNONIA CLELIA Cram.

Six specimens: 3 ♂, 3 ♀. Hargaisa, April 25-28, 1895. The undersides of these specimens vary, but in all the ocelli are more distinct and the general tint is less uniform than in the ordinary "dry-season" form of the species.

JUNONIA TAVETA Rogenh.

One male. Hargaisa, April 25-28, 1895.

BYBLIA ILITHYIA Drury.

Four specimens: 3 ♂, 1 ♀. These are of the "intermediate" seasonal form, the female verging towards "wet"¹. All are dated Hargaisa, April 25-28, 1895.

HYPOLIMNAS MISIPPUS Linn.

Twenty-eight specimens: 26 ♂, 2 ♀. It is very remarkable that of the only two female specimens obtained by Mr. Peel, one should be of the ordinary form, resembling the type of *L. chrysippus*, and the other of the var. *alcippoides*, differing from the former only in the whitish suffusion on both surfaces of the hind wing. From the facts given above (see under *L. chrysippus*, p. 10), it would appear that the form *klugii* of *L. chrysippus* occurs in Somaliland to the exclusion of the type, and it might have been expected that the form of *H. misippus* ♀ which so closely resembles *klugii*, viz. *H. inaria* Cram., would have been the form similarly

¹ For a discussion of geographical and seasonal forms in the genus *Byblia* Hübn., with especial reference to the relations between the forms occurring in Somaliland and Socotra, see Dixey, Proc. Zool. Soc. 1898, pp. 376-379.

prevalent in that region. So far as the evidence of Mr. Peel's collection goes, the reverse is the case. Another remarkable fact in the distribution of these parallel forms is that while *H. klugii* is extremely rare in India, the corresponding variety of *H. misippus* ♀ occurs there not infrequently¹. It is also worthy of note that the white-winged West-African form, *Limnas alcippus* Cram., is accompanied by the ordinary, and not the white-winged, form of *H. misippus* ♀.

The dates and localities of the present examples are as follows:—Hargaisa, April 25–28, 1895, 6 ♂, 1 ♀ (ordinary type); Arigumeret, Farfanyer District, June 20, 1897, in thick bush, 2 ♂, 1 ♀ (var. *alcippoides* Butl.); Bally Maroli, Haud District (North Central Somaliland), June 25, 1897, in open plain, 14 ♂; Eyk, Haud District, July 2, 1897, 3 ♂. One other male was taken in Central or East Somaliland between June 5 and October 29, 1897, the exact locality being uncertain.

HAMANUMIDA DÆDALUS Fabr.

One male, Hargaisa, April 25–28, 1895. The underside is of the “dry-season” form, though not extreme.

LYCÆNINÆ.

POLYOMMATUS BÆTICUS Linn.

Two specimens, both males. On the thickly wooded banks of a dry river-bed, Haud, Odewein, June 21 & 23, 1897.

PLEBEIUS TROCHILUS Freyer.

Two females. Gerato Pass, Goolis Range (North-west Somaliland), June 9, 1897.

AZANUS JESOUS Guér.

Five males. Of these, four were captured on the dry sandy plateau of Edegan in the Haud District (North Central Somaliland), July 9, 1897; the remaining one was taken at Joh in the Haweea Country (East Central Somaliland), Sept. 20, 1897.

AZANUS THEBANA Stdgr.

Lycena macalenga, Trim. S.-Afr. Butterfl. vol. ii. p. 74 (1887).

Three specimens: 1 ♂, 2 ♀. One pair from Odewein, Haud, June 21–23, 1897, dry river-bed with thickly wooded banks; the other female from the sandy plateau of Edegan, in the same district, July 9, 1897.

LYCÆNESTHES PRINCEPS Butl.

Two females apparently belonging to this form, though somewhat smaller than the type, which came from Abyssinia. Edegan, Haud District, July 9, 1897.

¹ See Swinhoe, Journ. Linn. Soc., Zool. vol. xxv. pp. 340, 341. For a summary of the facts at present known with regard to the distribution of the forms in question, see Poulton, ‘Nature’ July 6, 1899, p. 223.

SPINDASIS SOMALINA Butl.

Spinlasis somalina, Butl. Proc. Zool. Soc. 1885, p. 764, pl. xlvii. fig. 5.

Two specimens, both males. Webbi Shebeyli, near Mount Kuldush (West Somaliland), June 28, 1895.

IOLAUS NURSEI Butl.

One male. Webbi Shebeyli, near Mount Kuldush, June 28, 1895.

PIERINÆ.

CATOPSILIA FLORELLA Fabr.

Forty-three specimens; 40 ♂, 3 ♀. Of these, 34 ♂ on July 2, 1897, and 1 ♀, July 4, 1897, were caught at a pool in the open plain of Eyk in the Haud District. The other captures were as follows:—Bun Feroli, N. of Shebeyli River (West Somaliland), June 10–20, 1895, 1 ♂; Odewein, Haud District (dry river-bed), June 21, 1897, 4 ♂, 2 ♀; Bally Maroli, Haud District (open plain), June 25, 1897, 1 ♂. The males, even those caught on the same day, vary much in size; in a few of the smaller examples the freckling of the underside is very faint or absent. The three females are all of the yellow form.

COLIAS MARNOANA Rogenh.

One female. Hargaisa, April 25–28, 1895.

TERIAS HAPALE Mab.

Two males. Hargaisa, April 25–28, 1895.

TERACOLUS EUPOMPE Klug.

Seven specimens; 4 ♂, 3 ♀. These were captured as follows:—a “dry season” ♂, and “intermediate” ♂ & ♀ at Hargaisa, April 25–28, 1895; a “wet season” ♂ in the dry river-bed at Odewein, Haud, June 23, 1897; a “wet season” ♂ & ♀ on the plateau of Edegan, July 9, 1897.

A remarkable form, apparently of the female of this species, was caught on the Sule River (West Somaliland), May 29, 1895. The wings have no marginal black except at the apex of the fore wing, and no black at the bases except a slight dusky powdering like that of the “dry season” male. The crimson apical patch has no chain of submarginal dark spots, but an ill-defined inner dark border to the patch is present, widened between the second and third median nervules. Beneath, there is only a very faint indication of the crimson apical patch, but the submarginal chain of dark spots in the fore wing is well-developed, except that there is no spot between the first and second branches of the median. The hind wings show a faint drab irroration, and the submarginal spots are ill-developed. The first submarginal spot of the fore wing, and the first two of the hind wing, together with the discoidal spot of the hind wing, are pale-centred, looking like incipient ocelli.

The "intermediate" female shows in some respects an approach to this condition, and the specimen just described may perhaps be considered as an extreme "dry season" form, though this would scarcely be expected in view of the recorded date.

TERACOLUS OMPHALE Godt.

Two specimens; ♂ & ♀. These were both caught at Hargaisa, April 25-28, 1895. They are of the "intermediate" form, and are smaller than the average size of the species.

TERACOLUS PHILLIPSI Butl.

Teracolus phillipsi, Butl. Proc. Zool. Soc. 1885, p. 772, pl. xlvii. fig. 11.

Nine specimens; 6 ♂, 3 ♀. The males are all of the "wet season" form; four were taken on July 4, 1897, at a pool in the open plain of Eyk, in the Haud District; the remaining two on the dry plain of Edegan in the same district, on July 9, 1897. Two "wet season" females were taken at Odewein, Haud, on June 21, 1897; and a "wet" or "intermediate" female at Hargaisa, April 25-28, 1895.

TERACOLUS HELVOLUS Butl.

Teracolus helvolus, Butl. Proc. Zool. Soc. 1888, p. 94.

Seven specimens; 5 ♂, 2 ♀. Four males and one female at Hargaisa, April 25-28, 1895. These are of the "dry season" form. A "wet season" ♂ & ♀ were taken in the river-bed at Odewein, June 23, 1897, and at the pool of Eyk on July 4, 1897, respectively.

TERACOLUS HELIOCAUSTUS Butl.

Teracolus heliocaustus, Butl. Proc. Zool. Soc. 1885, p. 768, pl. xlvii. figs. 8 & 9.

One male. Odewein, June 21, 1897.

TERACOLUS PROTOMEDIA Klug.

One male. Sibi (West Somaliland), May 27, 1895.

HERPÆNIA MELANARGE Butl.

Herpænia melanarge, Butl. Proc. Zool. Soc. 1885, p. 774.

Herpania iterata, Butl. Proc. Zool. Soc. 1888, p. 96.

One male. Sibi (West Somaliland), May 27, 1895. A "wet season" form.

BELENOIS PEELI, sp. nov. (Plate I. figs. 5 ♂, 6 ♀.)

Types (♂ & ♀) in Hope Museum, Oxford.

Exp. al., ♂ 50 mm., ♀ 52 mm.

Male. Above white, with a pearly lustre at the base of the wings as in *B. gidica*, *B. abyssinica*, &c., best marked in the fore wing. Costa of the fore wing with a very thin edging of black. A black marginal spot at the termination of each of the following

veins:—in the fore wing the 2nd and 3rd subcostal, the two radial and the three median branches; in the hind wing the 2nd subcostal, the radial, and the three median. These marginal spots are oval in the hind wing, the long axis being parallel with the border of the wing; in the fore wing they are more or less triangular, with their bases at the margin. The first two at the apex of the fore wing are more or less fused; the remainder in both wings are distinct. There is a slight submarginal powdering of black scales in the fore wing between the 2nd and 3rd subcostal, and also between the two radials. A much fainter powdering occurs between the 3rd subcostal and upper radial, and the slightest possible trace of a similar powdering between the 2nd and 3rd median. The marginal spots and the submarginal powdering mark out between them a very indistinct series of white subapical spots, the first three more or less wedge-shaped, the fourth nearly circular; these are barely to be separated from the general white surface. Beneath, the wings are white; there is a thin dusky line along the costa of the fore wing, and dark marginal spots, like those of the upper surface but smaller, occur at the extremities of the same veins in both wings. There is an orange-yellow patch at the base of the fore wing, occupying about one-fifth of the cell, and somewhat prolonged along the course of the subcostal vein. The same orange-yellow colour occurs in the hind wing as a streak along the costa, as a well-defined patch between the roots of the median and submedian veins, and as a median chain of spots crossing the disc of the wing from the costa to the inner border; these latter are seven in number, one occupying each interspace posterior to the costal vein except the space between the second subcostal and discoidal, and that between the second and third median. The third of the series surrounds the discocellular venule. This and the four succeeding spots are fairly distinct; the other two are faint. There is also a very slight indication of a submarginal series of dull yellow spots running parallel with the hind border of the wing.

Female. Above, like the male, but with the marginal dark spots somewhat larger. These are triangular in the hind wing, and in the fore wing become fused towards the apex into a narrow marginal band. The dark subapical powdering forms more definite and larger patches than in the male, and the white subapical spots are consequently more distinct. There is a trace of a marginal dark spot at the termination of the submedian vein of the fore wing, which is hardly if at all visible in the male. The basal pearly gloss is well marked, and the basal orange-yellow shows slightly through from the lower surface. Beneath, as in the male; but the basal orange-yellow occupies from one-third to one-half of the cell instead of only one-fifth. The submarginal series of spots is somewhat more distinct than in the male, and appears to be of the same orange-yellow as the median series.

In both sexes the first subcostal branch of the fore wing coalesces with the costal. The wings of the male are slightly more pointed,

as in *B. gidica*, &c., than those of the female. This species can readily be distinguished from any other of its genus by the entire absence of a dark discoidal spot from both surfaces of both wings in each sex, and by the presence of a double row of yellow or orange spots, unaccompanied by any dark markings, on the under-side of the hind wing. It is probably a "dry-season" form, and perhaps most nearly recalls the dry-season *B. abyssinica* Luc., but it is far less heavily marked.

Two specimens; ♂ & ♀. Sule River, West Somaliland, May 29, 1895. Both, especially the female, somewhat worn.

BELENOIS MESENTINA Cram.

Nine specimens; 6 ♂, 3 ♀. Dates and localities as follows:—Sule River, May 29, 1895, 2 ♂; Odewein, Haud, June 21, 1897, 2 ♂, 1 ♀; pool at Eyk, Haud District, July 4, 1897, 2 ♂, 1 ♀; summer or autumn of 1897 (Central or East Somaliland), 1 ♀.

NYCHITONA MEDUSA Cram.

1 ♀. Hargaisa, April 25–28, 1895. This is of the form *alcesta* Cram.

MYLOTHRIS AGATHINA Cram.

1 ♀. Sibi, May 27, 1895.

PAPILIONINÆ.

PAPILIO DEMOLEUS Linn.

Four specimens; 2 ♂, 2 ♀. Webbi Shebeyli, near Mt. Kuldush, June 27, 1895.

HESPERIIDÆ.

SARANGESA ELIMINATA Moore.

Two females, one at the Webbi Shebeyli, June 28, 1895; the other at Odewein, Haud, June 21–23, 1897.

RHOPALOCAMPTA ANCHISES Gerst.

4 ♂, 2 ♀. Two males and a female at Odewein, Haud, June 21–23, 1897; the remainder in the summer or autumn of 1897, in Central or East Somaliland, the exact locality being uncertain.

4. LEPIDOPTERA HETEROCERA.

By HERBERT DRUCE, F.L.S., F.Z.S.

Mr. Peel's collection of Moths includes specimens of four new species.

ARCTIADÆ.

SECUSIO STRIGATA Wlk.

North-west Somaliland, Hargaisa, April 25–28, 1895. One example.

DEIOPEIA PULCHELLA Linn.

N. Central Somaliland, Odewein, in the Haud District, June 21-23, 1897. In dry river-bed with thickly wooded banks. Two specimens.

NOCTUIDÆ.

HELIOTHIS ARMIGERA Hübn.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. One example.

EUPLEXIA OPPOSITA Wlk.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. One example.

AMYNA SELENAMPHA Guen.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. Two specimens.

AMYNA OCTO Guen.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. Two specimens.

TARACHE CAFFRARIA Cram.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. Two specimens. Somaliland, 1895 or 1897. One example.

COSMOPHILA SABULIFERA Guen.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. One example.

EUTELIA SUBAPICALIS Wlk.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. Two specimens. North-west Somaliland, Berbera, June 5-9, 1897. One example.

PSEUDOPHIA OPPIA, sp. n. (Plate I. fig. 1.)

Male. Head, antennæ, and collar white; thorax and tegulæ pale greyish brown; abdomen pale brown, each segment edged with white; the underside of the thorax, abdomen, and legs white. Primaries brown, the outer margin grey; a reddish-brown band edged with a metallic line crosses the wing about the middle from the costal to the inner margin; a short yellowish-white band at the end of the cell. Secondaries white, broadly bordered with black from the apex to the anal angle; the fringe black and white. Expanse 1 inch.

Hab. E. Somaliland: Joh, in the Haweea Country. Three specimens captured September 20, 1897. Type and co-type in the Hope Collection, co-type in the British Museum.

PSEUDOPHIA LINEATA, sp. n. (Plate I. fig. 7.)

Head, collar, thorax, and tegulæ pale greyish brown; abdomen wanting; antennæ whitish; legs and underside of the thorax white. Primaries greyish brown, palest at the base and on the costal and inner margin; a zigzag creamy-white line at the end of the cell extending to the base; a zigzag yellowish submarginal line extends from the costal margin near the apex to the anal angle; the marginal line bluish grey; the fringe dark brown. Secondaries greyish brown; the outer margin broadly bordered with dark brown; the fringe alternately brown and white. Expanse $1\frac{2}{5}$ inches.

Hab. North Central Somaliland: Haud, Odewein, June 21-23, 1897. In dry river-bed. One example. Type in Hope Collection, Oxford.

CEROCALA MUNDA, sp. n. (Plate I. fig. 3.)

The head, tegulæ, and thorax pale reddish brown; abdomen and legs reddish brown; antennæ and palpi brown. Primaries reddish grey, with a large reddish-brown spot near the base, one at the end of the cell and one on the inner margin close to the anal angle; the apex dark brown; a submarginal reddish line extends from the apex to the anal angle; the outer and inner margin greyish; the fringe white at the apex, the rest dark brown. Secondaries pale reddish brown; the outer margin spotted with black; a dark brown spot at the end of the cell; the fringe pale brown. Expanse $1\frac{1}{4}$ inches.

Hab. North Central Somaliland: Haud, Odewein, June 21-23, 1897. In dry river-bed. One example. Type in the Hope Collection, Oxford.

GNAMPTONYX VILIS Wlk.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. One broken example.

PLECOPTERA REFLEXA Guen.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. Two specimens.

TRIGONODES HYPASIA Cram.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. One example.

POLYDESMATA OTIOSA Guen.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. One example.

CYLLOGRAMMA LATONA Cram.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. Eleven specimens.

Somaliland (1895 or 1897). Four specimens.

OPHIUSA MELICERTE Cram.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. Two specimens.

Somaliland (1895 or 1897). Four specimens.

SPHINGOMORPHA CHLOREA Cram.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. One example.

Somaliland (1895 or 1897). Four specimens.

REMIGIA REPANDA Fabr.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. Two specimens.

ZETHES HESPERIDOIDES Guen.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. One example.

HYPENA ABYSSINIALIS Guen.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. Two specimens.

HYPENA ABYSSINIALIS var. *JUSSALIS* Wlk.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. Three specimens.

SPHINGIDÆ.

DEILEPHILA LIVORNICA Esp.

N. Central Somaliland, Haud District, Eyk, July 3, 1897. In the open plain, by thick bush. One ♀ example.

PHLEGETHONTIUS CONVULVULI Schauf.

N. Central Somaliland, Eyk, in the Haud District, July 3, 1897. In the open plain, by thick bush. One ♀ example.

GEOMETRIDÆ.

TEPHRINA DISPUTARIA Guen.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. One example.

LASIOCAMPIDÆ.

CHILENA SABRINA, sp. n. (Plate I. fig. 2.)

Male. Head and front of the thorax white; antennæ yellow; the collar and thorax pale brown; tegulæ pale brown edged with white; abdomen and legs white. Primaries pale brown, with two white bands extending from the base almost to the outer margin, the first line straight, the second curved; the costal margin edged with

white; the fringe white. Secondaries yellowish white. Expanse $1\frac{1}{4}$ inches.

Hab. West Somaliland (1895). One example. Type in Hope Collection, Oxford.

LIMACODIDÆ.

PARASA FULVICORPUS Hmpsn.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. One example.

ARBELA QUADRINOTATA Wlk.

N. Central Somaliland, Odewein, June 21-23, 1897. In dry river-bed. One example.

5. COLEOPTERA.

By C. J. GAHAN, M.A., and GILBERT J. ARROW.

With the exception of three species of *Curculionida* and two or three other species belonging to genera at present undetermined, all the species of Coleoptera of which examples were collected by Mr. C. V. A. Peel in Somaliland are enumerated in the following list. Mr. Arrow has contributed that portion which deals with the Lamellicorn beetles and has assisted also in the determination of some of the species belonging to other groups. Mrs. M. K. Thomas has been good enough to determine the species of *Mylabris* and to describe one new form belonging to that genus. One or two species have been described from African specimens other than those collected by Mr. Peel. Full reference to the history of such specimens will be found in the descriptions. [C. J. GAHAN.]

CARABIDÆ.

CALOSOMA RUGOSUM De Geer.

Central or East Somaliland. One example. June 5 to Oct. 29, 1897. A widely distributed species, being found in South and East Africa, Abyssinia, Nubia, and in the island of Socotra.

ANTHIA FEROX Thoms.

N.W. Somaliland, Galadi in the Mijertain Country. One example, Oct. 4, 1897. Occurs also in Abyssinia.

POLYHIRMA CALLIAUDI Casteln., var.

N.W. Somaliland, Galadi, Oct. 4, 1897. One example. The sutural vitta behind the scutellum is longer, and the elytra somewhat less strongly punctured than in normal examples from Abyssinia. Type of variety in British Museum.

CHLÆNIUS sp.

Central or East Somaliland. One example (1897).

HYDROPHILIDÆ.

HYDROPHILUS SENEGALENSIS Perch.

East Central Somaliland, Sinnadogha in the Haweea Country. One example, in water-tank, Sept. 8, 1897. This species is widely distributed throughout Africa.

HISTERIDÆ.

HISTER MEMNONIUS Erichs.

Central or East Somaliland. One example (1897). Occurs also in Senegambia, Nubia, Abyssinia, and East Africa.

HISTER GEHINI Mars.

Central or East Somaliland. One example (1897). Found also in Senegambia, Abyssinia, and East Africa.

SAPRINUS SEMIPUNCTATUS Fabr.

Central or East Somaliland. Six specimens (1897). (One perhaps 1895 Expedition.)

SAPRINUS CHALCITES Ill.

Central or East Somaliland. Four specimens (1897). Occurs also in Egypt, Abyssinia, and East Africa.

DERMESTIDÆ.

DERMESTES VULPINUS Fabr.

Central or East Somaliland. Ten specimens (1897).

SCARABÆIDÆ.

HYBOSORUS ILLIGERI Reiche.

Somaliland. Three specimens (1895 or 1897). This insect appears to be of almost world-wide distribution.

PHÆOCHROUS BECCARII Har. Coleopt. Hefte, viii. p. 26.

Somaliland. Four specimens (1895 or 1897), apparently belonging to this species, which was described from N. Abyssinia.

TROX SQUALIDUS Oliv.

Somaliland (1895 or 1897). Two specimens were found of this insect, which is distributed generally throughout Africa.

TROX EXPANSUS Arrow, sp. n. (Plate I. fig. 16.)

Breviter ovatus, modice convexus, ferrugineo-tomentosus; capite bituberculato; prothoracis latitudine quam longitudine duplo majore, lateribus fortiter explanatis, serratis, angulis posticis fere rectis, disco quadri-carinato, carinis post medium convergentibus; elytrorum marginibus late explanatis, biseriatis tuberculiferis, dorso confluentur seriato-tuberculato, interstitiis

parce granulatis; antennis ferrugineis, articulo primo nigro, fusco-hirto; tibiis anticis acute quadridentatis, aliis serratis. Long. 21 mm., lat. 13 mm.

Type in British Museum.

The single specimen was obtained in Central or Eastern Somaliland (1897). This species is allied to *T. denticulatus* Oliv., which also occurs in Somaliland, but it is considerably larger and relatively broader, the widely dilated margins of the elytra making their outline almost circular. The elytral costæ consist of irregular tubercles which are separate at the base, more or less confluent on the disc, and small and scattered towards the apex; the alternate rows only of these reach the basal margins of the elytra. The anterior tibia is armed with four acute teeth placed at right angles to its axis and regularly increasing in size towards its extremity, the last being very sharp and prominent. *T. funestus* Lansb., a W. African species, appears to be nearly related to this insect, but is smaller and narrower, *T. expansus* being one of the largest at present known in the genus.

SCARABÆUS ISIDIS Cast.

North Central Somaliland, Bally Maroli in the Haud District. Two examples, June 25, 1897. This occurs throughout the Nile Valley and also in S.W. Asia.

SCARABÆUS BETTONI Waterh. Ann. & Mag. Nat. Hist. (6) xx. p. 553 (1897).

One specimen found July 26, 1895, at Whardi Datal, Northwest Somaliland. It was recently discovered by Mr. Betton in British East Africa.

GYMNOPLEURUS LÆVIS Arrow, sp. n.

G. splendenti valde affinis, sed colore, et sculptura minus evidente, distinctus, fusco-niger, lævis, opacus; pedibus antennisque fusco-rufis, harum clavis ferrugineis; capite subtiliter granulato, antice acute quadridentato; prothorace convexo, subtiliter coriaceo, linea media lævi angusta, basi bi-impressa, lateribus parum grosse foveolatis, marginibus lateralibus anguste reflexis postice obtuse angulatis; elytris subtilissime disperse granulatis et vix striatis, absque plicatulis; pedum anteriorum tibiis serratis, dentibus tribus terminalibus acutis et longissimis munitis, femoribus emarginatis et dentatis. Long. 16 mm.

Type in British Museum.

One example (1895 or 1897). This insect is almost black without a trace of metallic lustre. The surface is very smooth, with a fine granulation which is most apparent on the head and exceedingly minute on the elytra. The striation of the latter is almost obsolete and only visible under a lens. The three teeth upon the anterior tibiæ are very long and acute.

G. lugens of Fairm. is very near this species, but is more nearly related to *G. splendens* Cast., if not merely a variety of it.

COPRIS HARRISI Waterh. Ann. & Mag. Nat. Hist. (6) vii. p. 515 (1891).

Two female specimens of this insect, described from Abyssinia, were found at Whardi Datal (July 26, 1895).

ONTHOPHAGUS GERSTAECKERI Har.

A single specimen was brought from Central or East Somaliland (1897).

ONTHOPHAGUS GAZELLA Fabr.

One example (1895 or 1897). This insect occurs throughout Africa and even extends to Madagascar.

ONTHOPHAGUS sp.

A single female of another small species, probably new (1895 or 1897).

SCHIZONYCHA SQUAMOSA Raffray.

Three specimens (1895 or 1897). This species appears to be common in Somaliland, having occurred in several collections from that country.

SCHIZONYCHA NIGROFUSCA Arrow, sp. n.

Ovato-cylindrica, fere nigra, antennis pallidioribus, pectore flavo-hirto; clypeo aequaliter punctato, margine arcuato vix sinuato fortiter reflexo, fronte acute bicarinata, vertice spatioso post carinam anteriorem levibus; prothorace antice et postice valde contracto, grosse et confluentur punctato, punctis squamiferis, lateribus crenatis et piliferis, ante marginem posteriorem utrinque elevato et levigato; scutello fere levi punctis nonnullis grossis sulcaque obsolete mediana; elytris cum pygidio dense sat grosse punctatis, punctis squamas setiformes vix perspicuas ferentibus; tibiis anticis tridentatis, dente superiore parvo. Long. 18-19 mm. ♀.

Type in British Museum, co-type in the Hope Coll., Oxford.

Two specimens, both females (1895 or 1897).

This insect is readily distinguishable from the majority of its congeners by its dark colour. It has some resemblance to the common W. African *S. crenata*, but the prothorax is relatively much smaller.

Single specimens of two other apparently new species were found (1895 or 1897), but in view of the large number of closely related forms described, it seems advisable to leave them for the present unnamed.

ANOMALA, sp. n.

Two specimens, ♂ and ♀, were collected (1895 or 1897), exhibiting a difference in the structure of the claws, and probably allied to *A. transvalensis* Arrow. As the anterior tarsi of the male

are imperfect, the affinity of the species cannot be decided with certainty, and it will therefore not be described.

There are two more single specimens (1897) of species of this genus, which can only be properly described from individuals of both sexes.

PHYLLOPERTHA HORTICOLA Linn.

One example (1897). The distribution of this insect is very remarkable. It is properly a northern insect, occurring throughout the North of Europe and Asia from the British Islands to Japan. In the British Museum, however, are specimens from South Africa, and Mr. Peel has now brought a specimen from Somaliland. It seems possible that these African examples have been artificially introduced.

HOMOTHYREA HELENÆ Schaum.

Two specimens (1897). This species has also been found in Abyssinia, in East Africa, and at Aden in South Arabia.

RHABDOTIS SOBRINA G. & P.

Fifteen specimens, found by Mr. Peel on mimosa bushes at Arigumeret, Farfanyer District of Central Somaliland.

BUPRESTIDÆ.

JULODIS LATICOLLIS Gahan, sp. n. (Plate I. fig. 15.)

Viridi-metallica, supra fere glabra, infra subaurata sat dense cano-pilosa; capite dense punctato; prothorace brevi, lato, supra valde convexo, dense minus fortiter punctato et subopaco, lateraliter rugoso-punctato, basi utrinque fortiter sinuato, medio acutangulatim producto; elytris quam prothorace vix latioribus, dense irregulariterque foveolatim impressis; foveolis subauratis, dense punctatis et plus minusve pubescentibus, interstitiis elevatis, angustis, reticulatis et impunctatis. Long. 18, lat. 8 mm.

Hab. Somaliland (1895 or 1897). One female example. Type in British Museum.

This species seems to be allied to *J. vittipennis* Fähr., and *J. subvittata* Saund. (*Amblysterna*), but is readily distinguished from either by its broader form, its shorter, broader, and more convex prothorax, and its differently sculptured elytra.

STERASPIS sp.

Central or East Somaliland (1897). One example.

PSILOPTERA SOMALICA Gahan, sp. n. (Plate I. fig. 10.)

Purpureo-violacea, elytris (foveis pubescentibus propter 40 cupreatis, prætermisissis) nigris, tarsis supra viridibus; capite inter oculos sat lato, dense fortiterque punctato, versus medium sparse, ad latera dense sat longeque, pubescente; prothorace quam longiore sesqui-latior, antice a medio angustato, supra sat dense forti-

terque punctato, area parva triangulare ante scutellum levi; elytris punctato-striatis, apice acuminatis, interstitiis antice fere planis, versus apicem angustis et conveaxis. Long. 25, lat. 9 mm.

Hab. Central or East Somaliland (1897). One example. Type in British Museum.

Head, prothorax, legs, and underside of a purplish-violet colour; tarsi metallic green above. Elytra black, each with about twenty shallow cupreous pits, which are densely punctured and more or less completely covered with greyish-white pubescence: six or seven of the smallest of these pits are placed at irregular intervals along the third elytral interstice, three of the larger pits on the fifth, three on the seventh, and about seven, diminishing in size from before backwards, along the ninth interstice; one of the larger pits on the fifth interstice, a little in front of the middle, and one at a short distance behind the middle, encroach upon the sixth interstice and nearly join two correspondingly large pits upon the seventh interstice.

This species differs from all other African species of the genus known to me in the disposition of the pubescent pits on the elytra, and is further distinguished by having each of the elytra narrowed to a single point, and not truncate at the apex.

ELATERIDÆ.

AGRYPNUS LONGICORNIS Gahan, sp. n. (Plate I. fig. 11.)

Rufo-brunneus, luteo-pilosulus; antennis nigris, basin elytrorum paullo superantibus, articulo 3° quam 2° haud longiore, articulis 4° ad 10^{um} angulatim sat valde productis; prothoracæ quam latiori vix longiori, supra sat valde convexo, lateribus medio paullo rotundatis, angulis posticis tenuibus, acutis, divaricatis; elytris tenuiter punctato-striatis. Long. 17, lat. 5 mm.

Hab. Central or East Somaliland (1897). One example. Type in British Museum.

In general appearance this species resembles *A. bocandei* Cand., but is easily to be distinguished by the black colour and greater length of its antennæ. The third joint of the antennæ is a little broader, but not longer, than the second, and the joints from the fourth to the tenth are each produced antero-distally into a strong angulate process; the disc of the prothorax is more convex and somewhat less densely punctured, and the sides are more rounded in the middle than is the case with *A. bocandei*.

DASCILLIDÆ.

GENECERUS NEBULOSUS Gahan, sp. n. (Plate I. fig. 9.)

Piceo-brunneus, cinereo- sat dense pubescens; elytris brunneo-nebulosis, longitudinaliter subcostatis; antennis (♂) flabellatis vel (♀) serratis. Long. 14-16, lat. 4-4½ mm.

Hab. Brit. E. Africa: Samburu, Voi and Ndi (C. S. Betton);

Central or East Somaliland (1897), two males (*C. V. A. Peel*). Type in the British Museum, co-type in Hope Coll.

Dark brown to reddish brown in colour; covered with an ashy-grey pubescence. Elytra with a number of dark-brown blotches, which are, however, absent in some specimens, so that the elytra have a nearly uniform grey colour. Head with a Y-shaped glabrous mark reaching from the antennary condyles to the occiput; eyes rather large, hemispherical, finely faceted. Prothorax about one half broader than long; its antero-lateral angles rounded and obtuse; the postero-lateral very slightly projecting and acute; the disc marked with a faint median impressed line extending from the anterior margin almost to the base. Elytra with some feebly raised and obtuse longitudinal costæ, along which the grey pubescence seems somewhat more dense than over the rest of the surface. Mesosternum with a small projecting process near the middle of its anterior margin, this process being fringed with fulvous hairs at its sides and apex. Posterior margin of the fifth abdominal sternite of the male bisinuate.

This species, though very distinct from *Genecerus cervinus* Walk., appears to be truly congeneric with it, agreeing as it does in all essential points of structure. The genus *Genecerus*, stated by Walker to be allied to *Plastocerus*, and by subsequent authors placed in the family *Cebrionidæ*, seems to me to belong to the family *Dascillidæ*, in which I should place it near *Anorus* Lec.

LYCIDÆ.

LYCUS AMPLIATUS Fähr.

North-west Somaliland, Hargasia, April 25-28, 1895. One example. This species is found also in East Africa as well as in Natal and the Cape of Good Hope.

CLERIDÆ.

NECROBIA RUFIPES De Geer.

Central or East Somaliland (1897). Three specimens.

BOSTRYCHIDÆ.

APATE TEREBRANS Pall.

West Somaliland, Bun Jijiga, July 15, 1895. Three examples. This species occurs also in West Africa from the Gold Coast to Angola, in Natal, Nyasaland, and East Africa.

BOSTRYCHUS sp.

Central or East Somaliland (1897). Two specimens.

TENEBRIONIDÆ.

ZOPHOSIS AROMATUM Gestro, Ann. Mus. Civ. Gen. (2) xv. p. 258.

Central or East Somaliland (1897). The two examples obtained by Mr. Peel are somewhat larger than the type from Archeisa

described by Dr. Gestro, but in other respects fully agree with the description.

HOMALA AGONA Fairm.

Central or East Somaliland (1897). Two specimens.

RHYTIDONOTA DELICATULA Fairm.

Central or East Somaliland (1897). Two specimens.

RHYTIDONOTA ROBUSTA Gahan, sp. n. (Plate I. fig. 13.)

Capite supra subtilissime punctato, clypeo utrinque leviter impresso; prothorace quam longitudine paullo latiori, lateribus marginatis antice arcuatim convergentibus, versus basin minus fortiter convergentibus, angulis posticis sat latis et retro paullo productis; elytris quam prothorace paullo latioribus, basi marginatis et ad humeros angulatis. Long. 19–20, lat. $7\frac{1}{2}$ mm.

Hab. Central or East Somaliland (1897), two specimens; and West Somaliland (1895), one specimen. Type (Central or East Somaliland) in British Museum, co-type in Hope Collection.

Prothorax nearly one-fourth broader than its length; widest across the middle, with sides converging strongly towards the apex, less strongly towards the base; basal margin straight in the middle, oblique towards each side and there forming with the lateral margin a subacute angle slightly projecting backwards. Elytra widest a little in front of the middle, narrowed slightly towards the base, and strongly towards the apex; completely margined at the base, and with a small projection at each of the humeral angles. Third joint of the antennæ twice as long as the second, and nearly equal in length to the fourth and fifth united.

HIMATISMUS sp.

Central or East Somaliland (1897). One example.

OCNERA sp.

Somaliland (1895 or 1897). One mutilated specimen.

PIMELIA HILDEBRANDTI Har.

P. cenchronota Fairm.

Central or East Somaliland (1897). Four specimens.

PSAMMODES sp.

Somaliland (1895 or 1897). Two specimens.

AMANTUS sp.

Central or East Somaliland (1897). One mutilated specimen.

AMANTUS SEXCOSTATUS Gahan, sp. n.

Niger; prothorace supra valde convexo, dense fortiterque punctato, lateribus paullo rotundatis, postice leviter marginatis; elytris ad suturam haud elevatis, utroque carinis tribus sat valde

elevatis instructo, carinis omnibus fere æquilongis, a basi ad declivitatem apicalem extensis; segmentis 2^o 3^oque abdominis in medio rufulo-pilosis. Long. 19, lat. (ad med. elytrorum) 10½ mm.

Hab. Central or East Somaliland (1897). One example. Type in British Museum.

Black; prothorax strongly convex above, and strongly and rather thickly punctured; its sides slightly rounded in the middle and feebly marginate posteriorly, the margins becoming obsolete in front. Elytra depressed along the suture, each with three well-marked carinæ reaching from the base to the posterior declivous portion, the intervals between the carinæ being rather strongly concave; the concave sutural area between the innermost carinæ is sparsely granular in its anterior half. Femora rugosely punctured. Second and third abdominal segments with a patch of reddish pubescence in the middle.

SEPIDIOSTENUS ERINACEUS Fairm.

North Central Somaliland: Bally Maroli in the Haud District, June 25, 1897. Nine specimens, captured in the open plain.

SEPIDIUM MAGNUM Gahan, sp. n. (Plate I. fig. 12.)

Pube pallide cervina dense obtectum: prothorace utrinque plaga subnuda nigra, elytris rugis elevatis glabris nigro-fuscis, et plagis adspersis cretaceis; prothorace basi apiceque constricto, lateraliter carinato, carina antice obtusa, pone medium tuberculatim dilatata, disco in medio carinato, antice valde tuberculato, tuberculo crasso, apice rotundato supra sulcato-impresso haud bifurcato; elytris utrisque longitudinaliter bi-carinatis, transversim reticulatimque rugosis. Long. 29-35, lat. (ad med. elytrorum) 12-15 mm.

Hab. Central or East Somaliland (1897). Four examples. Type and co-type in British Museum, co-types in Hope Collection.

Brownish black, with the head, prothorax, underside, legs, and antennæ thickly covered with a pale fawn-coloured pubescence. Prothorax furnished with a large prominent tubercle, directed obliquely forwards from the anterior part of the disc; this tubercle is rounded at the extremity, impressed along the middle with a linear groove, and has on each side a naked and rugose black patch; from the base of the tubercle a median carina runs along the disc to the base of the prothorax. On each side of the prothorax there is a carina, obtuse in front, but more acute and prominent behind the middle, there forming a flattened tubercle, behind which the prothorax is abruptly constricted. Elytra each with two longitudinal and more or less sinuous carinæ, each of which gives off short transverse or reticulating ridges on both sides.

This species is one of the largest of the genus, being equal in size to *S. ruspolti* Fairm., from which it differs chiefly in having the lateral tubercles of the prothorax placed behind the middle

and in the presence of short transverse ridges running from the dorsal carina of each elytron towards the suture.

SEPIDIUM BILOBATUM Gahan, sp. n. (Plate I. fig. 14.)

Pube rufulo-cervina dense obtectum: elytris supra plus minusve cinereis; prothorace antice valde tuberculato, tuberculo crasso antrorsum directo et bilobato; elytris dense fortiterque punctatis, utriusque disco tuberculato, tuberculis in seriebus duabus irregularibus ordinatis. Long. 17, lat. 6 mm.

Hab. Somaliland (1895 or 1897). One example. Type in British Museum.

Closely covered with a reddish-fawn-coloured pubescence, with the disc of each elytron ashy grey along the middle. Prothorax with a large tubercle directed almost horizontally forwards from the anterior part of the disc; this tubercle is distinctly bilobed in front, each lobe being rounded at the extremity; each side of the prothorax carinate, the carina dilated to form a tubercle just behind the middle. Elytra densely and strongly punctured; the disc of each with a number of sharply raised tubercles forming two irregular, longitudinal series.

SEPIDIUM CRASSICAUDATUM Gestro.

Somaliland (1895 or 1897). Nine examples.

VIETA sp.

Central or East Somaliland (1897). One example.

VIETOMORPHA FOVEIPENNIS Fairm.

Central or East Somaliland (1897). One example.

MICRANTEREUS sp.

Central or East Somaliland (1897). One male example.

MICRANTEREUS ASIDOIDES Fairm.

Central or East Somaliland (1897). One example.

AMARYGMUS sp.

Somaliland (1895 or 1897). One mutilated example.

PRAOGENA NIGRA Gahan, sp. n.

Nigra; capite prothoraceque crebre punctatis et opacis; elytris nitidis, seriatim haud fortiter punctatis, interstitiis planis, sparse minutissime punctulatis. Long. 13, lat. $4\frac{1}{2}$ mm.

Hab. Somaliland (T. Greenfield and C. V. A. Peel, 1895 or 1897). Type in British Museum, co-type in Hope Collection.

Entirely black, with the elytra somewhat glossy and the rest of the surface more or less opaque. Head and prothorax closely punctured, the latter a little broader than long, slightly rounded at the sides. Elytra each with nine rows of rather small punctures, the first row (that next the suture) being very short;

intervals between the rows flat and sparsely and very minutely punctulate.

This species is larger and less convex than *P. gagatina* Mäkl., its prothorax is relatively a little broader, the rows of punctures on its elytra are much finer, and it is distinguished further from that species by its darker coloration and its glossy elytra.

CANTHARIDÆ.

MYLABRIS HYPOLACHNA Gestro.

Central or East Somaliland (1897). Two examples.

MYLABRIS SENNÆ Gestro.

Central or East Somaliland (1897). Three examples

MYLABRIS LATEPLAGIATA Fairm.

Central or East Somaliland (1897). One example.

MYLABRIS SOMALICA Thomas, sp. n.

Black, opaque, rugose, clothed with short yellow pubescence interspersed with longish black hairs. The head (which has an elevated shining median longitudinal line), prothorax, and elytra all thickly and coarsely punctured; the elytra dilated and widening towards the apex.

Each elytron ornamented with two long oval basal yellow markings, the marginal one joining a transverse yellow band extending to suture, and with a second transverse band, starting from but not quite touching the suture, extending down margin and curving round across the apex of elytron back to the suture: these markings are all margined by a fine brownish-red line. Antennæ red, with the exception of the first and second joints, which are black. The underside, legs, and tarsi are all black with long yellow hairs; the nails and spurs red.

This species is very similar to *Mylabris hypolachna* of Gestro¹ in size, form, and general characteristics, but it differs in having the second transverse band continued along the outer margin and thence across the apex to the suture.

Length 12 millim., breadth 4 millim.

Hab. Central or East Somaliland (1897). Type in the British Museum. [M. K. THOMAS.]

EPICAUTA AMETHYSTINA Mäkl.

Somaliland (1895 or 1897). One example.

CERAMBYCIDÆ.

MACROTOMA PALMATA Fabr.

West Somaliland: South-west Haud, Owari, East of Milmil (March 16, 1895). One example of this widely distributed African Prionid.

¹ Ann. Mus. Genov. (2) xv. p. 393 (1895).

PLOCEDERUS MELANCHOLICUS Gahan, var.

Central or East Somaliland (1897). This variety occurs also in South Arabia and in British East Africa.

PLOCEDERUS PEELI Gahan, Ann. & Mag. Nat. Hist. (7) ii. p. 42 (1898).

Somaliland (1895 or 1897). One example. Co-type in Hope Collection.

This species has been found in British East Africa as well as in Somaliland.

PACHYDISSUS (DEROLUS) SOMALICUS Gahan, sp. n.

Piceo-brunneus, griseo-pubescentis; prothorace supra rugoso, lateraliter paullo rotundato, area opaca excisa inter notum pleurumque; elytris absque punctis (punctulis minutissimis pubescentiam gerentibus exceptis); femoribus subtus leviter bicarinatis; antennis (♀) quam corpore paullo brevioribus. Long. 17, lat. 4 mm.

Hab. Somaliland (1895 or 1897). One example. Type in British Museum.

Head and prothorax dark brown, with a greyish pubescence. Head with a sulcate impression on the vertex between the upper lobes of the eyes. Prothorax a little longer than broad; transversely wrinkled above; slightly rounded in the middle on each side, with a small excised space, bare of pubescence, just below the pronotum. Elytra parallel-sided throughout the greater part of their length, rounded at the apex; clothed with a short closely laid grey pubescence, and devoid of all punctures, excepting those very minute ones from which the hairs of the pubescence spring. Femora feebly carinate along each side near the ventral border. Prosternal process subvertical behind; the small antero-lateral processes of metasternum almost completely shutting off the epimera from the intermediate cotyloid cavities.

PHYLLOCNEMA SEMIJANTHINA Fairm.

Central or East Somaliland (1897). Two examples.

ALPHITOPOLA PEELI Gahan, sp. n.

Fusca; capite, prothorace, scutello et corporis inferioris lateribus pube fulvo-ferruginea obtectis; elytris fuscis, vitta suturali et vitta postica submarginali cinnamomeis, utroque elytro puncta basali et maculis quatuor—duabus (quarum interna elongato-ovali, medio fusco-punctata) ante medium, duabus (elongatis et postice conjunctis) pone medium—niveis ornato. Long. 17, lat. 5½ mm.

Hab. Galadi in N.W. Somaliland. One example, Oct. 4, 1897. Type in British Museum.

Head and prothorax dark brown, covered with a short reddish-tawny pubescence. Prothorax transverse; with a small blunt tubercle at the middle of each side; with two transverse sulcate impressions near the base and two near the apex. Elytra dark brown, somewhat thickly punctured, with the punctures rather large near the base and diminishing in size posteriorly; a sutural

vitta, and a submarginal vitta on each elytron reaching from the middle to the apex, where it joins the sutural vitta, cinnamon-coloured; a small punctiform spot at the extreme base, two spots in front of the middle and two behind the middle of each elytron, snow-white; the inner spot of the anterior pair larger than the outer, elongate-oval in shape, and marked in the middle with a narrow brown spot; the outer spot of the same pair emarginate in front; the two spots of the posterior pair elongate, with the inner one commencing before the outer and coalescing with it behind. Body underneath with an ashy-grey pubescence along the middle, fulvous brown towards the sides; legs brown, more or less suffused with grey at the base and on the ventral side. Intercoxal process of the mesosternum very feebly tubercled in the middle. Last abdominal segment feebly and sinuately emarginate at the apex.

Antennæ longer (by the last three or four joints) than the body, third joint half as long again as the fourth.

CEROPLESIS REVOILI Fairm.

West (April 16 to Aug. 7, 1895) and North-west Somaliland, Galadi (Oct. 4, 1897). Three examples, two from the latter locality.

CERATITES JASPIDEUS Serv.

Somaliland (1895 or 1897). Ten specimens. This species occurs also in West and East Africa and in Abyssinia.

CALOTHYRZA PAULI (Fairm.).

Anoplostetha pauli Fairm. C. R. Soc. Ent. Belg. 1884, p. 124; Ann. Soc. Ent. Fr. 1887, p. 338.

West Somaliland, Bularli (May 24, 1895). One specimen.

In this species and in the closely allied South-African *A. jardinei* White the claws of the tarsi are divaricate, and the scape of the antennæ is entirely devoid of a cicatrix. Both species are out of place in *Anoplostetha* and should be referred to the genus *Calothyrsa* Thoms., with which they agree in all essential points of structure. A third African species of *Calothyrsa* has been described by Dr. Gestro (Ann. Mus. Civ. Gen. (2) xv. p. 423), the remaining species of this genus being the two Indian forms—*C. sehestedi* Fabr. Ent. Syst. Suppl. p. 146 (= *C. margaritifera* Thoms.) and *C. margaritifera* Westw.

CROSSOTUS PLUMICORNIS Serv.

North-west Somaliland, Hargaisa (April 25 to 28, 1895). One example. This species is found in Senegambia, in East Africa and Natal, an example from the last-mentioned locality forming the type of White's *C. natalensis*.

CROSSOTUS sp.

Central or East Somaliland (1897). One somewhat rubbed female specimen.

6. NEUROPTERA.

By ROBERT McLACHLAN, F.R.S. &c.

PLANIPENNIA.

PALPARES PAPILIONOIDES Klug, var.

West Somaliland, Sule River, May 29, 1895. One female.

It appears to me to be safer to regard this single specimen as a variety of *P. papilionoides* rather than to describe it as new. Klug's species was from Arabia Felix. When compared with Klug's description and figures, this female is somewhat larger and the dark bands of the anterior wings are more distinctly fenestrated in consequence of the dark colour being restricted to margining of the network. Some examples of *P. tristis* Hagen, diverge from the type form in the same manner, and I have a female from Somaliland that at first I thought was specifically identical with that from the Sule River, but there is a slightly different form of wing, and in *papilionoides* the abdomen has black longitudinal bands which are wanting in *tristis*.

PALPARES WALKERI McLachlan.

Sule River, May 24, 1895. One female.

The male of this species was described by me in the Ent. Monthly Mag. for August 1894 from two examples taken by Mr. J. J. Walker, R.N., F.L.S., at Aden, which are in my collection. Subsequently Col. Yerbury, R.A., F.Z.S., found examples of both sexes at the same place and presented them to the British Museum. Upon comparing the female from Somaliland with those from Aden, I see nothing that can be considered of specific difference. The female has never been described. It is larger (expanse about 130 mm.) and the wings are broader (19 mm.), the isolated black markings on the anterior wings are larger; on the posterior wings the fasciæ are both broader and longer, the second of them extending to the dorsal margin, and very broad and strongly angulate in the middle; the third is also very broad and connected more or less with a series of spots towards the dorsal margin. (In no two specimens do the dark bands and other markings precisely agree nor are they symmetrical on the opposing wings.)

MYRMELEON VARIEGATUS Klug.

West Somaliland (1895). One male, without indication of further locality. Described originally from Arabia Felix. I have what appears to be exactly the same species from the Sinai Peninsula. Probably widespread.

ODONATA.

CACERGATE LEUCOSTICTA Burm.

East Central Somaliland: Haweea Country, Sinnadohga, by a water-tank, Sept. 8, 1897. One female.

A widespread African insect.

GYNACANTHA sp. ?

One immature female from the same locality as the preceding. This in all probability represents a new species, but I am not disposed to describe and name a species of this very critical genus from an immature female. It appears to be quite distinct from any West-African species.

7. ORTHOPTERA.

By MALCOLM BURR, F.Z.S., F.E.S.

(Except *Phasmatodea* by Dr. C. BRUNNER VON WATTENWYL.)

The collection of Orthoptera made by Mr. C. V. A. Peel in Somaliland is not large, but contains examples of a good number of genera and species new to science. These are distributed as follows:—

	Number of species.	New Genera.	New Species.
Blattodea.....	4	—	—
Mantodea	6	1	1
Phasmatodea	3	1	2
Acridiodea	15	1	2
Locustodea	11	1	7
Gryllodea	4	—	—
	<hr/>	<hr/>	<hr/>
Total	43	4	12

It will be noticed that there are no less than seven novelties out of the eleven Locustodea captured, a high percentage, which is probably due to the stationary habits of these insects. Most of these new species are *Phaneropteridæ*, for there are only one Conocephalid and one Stenopelmatid, both of which are flightless forms.

The collection contains no Forficularia.

An account of a collection of Orthoptera made in Somaliland by the late Prince Ruspoli has been published by Herr Dr. Schultess Rechberg-Schindler. They are mostly of the same genera, but the species are different. This is especially noticeable among the new forms.

I take this opportunity of acknowledging my deep indebtedness to Herr Dr. C. Brunner von Wattenwyl, for his invaluable assistance in the identification of many of the more difficult and obscure species, especially for the determination and descriptions of the *Phasmatodea*, upon which group his knowledge is unrivalled.

BLATTODEA.

PHYLLODROMIIDÆ.

ISCHNOPTERA ATRA Walk.

Somaliland (April 16 to Aug. 7, 1895, or June 5 to Oct. 29, 1897). One male.

PERISPHERIDÆ.

DEROCALYMMA BOTTEGIANA Sauss.

Central or East Somaliland (1897). Two female specimens.

I cannot distinguish *D. analis* Sauss. from *D. bottegiana* Sauss. The former is merely referred to and included in the synoptical table, which is very difficult to follow. Mr. Peel's two examples appear to agree entirely with the description of *D. bottegiana* Sauss., which is described from Somali specimens. One of these specimens still retains the yellowish velvet coat which is so easily lost in handling. They are both a shade smaller than de Saussure's types.

PERIPLANETIDÆ.

BLATTA ORIENTALIS L.

Somaliland (1895 or 1897). One female.

PERIPLANETA AMERICANA (L.).

Somaliland (1895 or 1897). One female.

MANTODEA.

ORTHODERIDÆ.

CHARIEIS, gen. nov.

Oculi conici, apice pedunculati. Caput haud valde depressum. Colore griseo. Ocelli in triangulum positi; antennæ elongatæ, graciles, testaceæ; occiput convexum. Pronotum breve, sulculo irregulari transverso instructum, margine antico subsinuato, dilatato, margine postico rotundato, postice angustatum. Elytra et alæ perfecte explicatæ. Illa membranacea, remote venosa, hyalina, venis infuscatiss, venulis transversis ramorum vena radialis incrassatis, bicoloribus; membrana anulis brevis, sed longior quam latior. Hæ hyalinæ, venulis areæ anticæ infuscatiss. Pedes graciles; femora antica gracilia, spinis discoidalibus 3 parvis armata, spinis marginis externo irregularibus, primæ minimo, 2^o longiori, 3^o-6^{um} parvis, dehinc margine crenulato. Tibiæ anticæ spinis brevibus armatæ. Lamina subgenitalis ♀ magna, fornicata, rotundata. Cerci ♀ sat longi, laminam subgenitalem haud superantes. Lamina supraanalis ♀ brevis, transversa. ♀. ♂ ignotus.

This genus is a link between Brunner's two sections of the *Orthoderidæ*. In the form of the pronotum it agrees with *Chaetessa* Burm., while the presence of small discoidal spines on the anterior femora would place it in the second division. The conical and pedunculated eyes, the spines of the anterior tibiæ, the discoidal spines, the somewhat long anal membrane of the elytra separate it from *Chaetessa* Burm.; the form of the pronotum satisfactorily divides it from the *Eremiaphilæ*, *Humbertiellæ*, and *Chiropachæ*.

In general appearance and coloration it resembles *Chiropacha* and *Tarachodes*, but it differs in the depressed head.

CHARIEIS PEELI, sp. n. (Plate II. fig. 4.)

Parva, grisea. Elytra hyalina, venulis infuscatis. Alæ hyalinæ, venulis partis antice infuscatis. Pronotum inerme. ♀.

	♀.
Long. corporis	24 mm.
„ pronoti	3.5
„ elytrorum	22
Lat. max. pronoti	3
„ min. „	2
Long. fem. anticorum	3.5
„ tibiarum „	2.5

Patria. West Somaliland: North-west Haud, Abriordi Garodi, May 4, 1895. One female example. Type in Hope Collection, Oxford.

(In the figure, the antennæ and apex of the abdomen are wanting.)

CHIROPACHA DIVES Sauss.

West Somaliland: North-west Haud, Abriordi Garodi, May 4, 1895. Three male specimens.

CHIROPACHA GILVA Charp.

West Somaliland: North-west Haud, Abriordi Garodi, May 4, 1895. Two specimens, male and female.

MANTIDÆ.

POPA UNDULATA (Fabr.).

West Somaliland: North-west Haud, Abriordi Garodi, May 4, 1895. Two specimens, one male and one nymph.

MIOMANTIS FENESTRATA (Fabr.).

West Somaliland: North-west Haud, Abriordi Garodi, May 4, 1895. One male.

HIERODULA sp.

North-west Somaliland, Berbera, April 16, 1895. One mutilated specimen.

PHASMATODEA.

By C. BRUNNER VON WATTENWYL.

CLITUMNIDÆ.

BURRIA, gen. nov.¹

♀. *Caput elongatum. Antennæ tertiam partem femorum anticorum haud attingentes, articulo secundo moniliformi. Thorax granulatus. Femora omnia acute carinata, mutica. Segmentum abdominale octavarum longum, segmenta bina terminalia unita superans. Segmentum anale parum compressum, minime emar-*

¹ In honorem scrutatoris assidui Malcolm Burr.

ginatum, lamina supraanali minima apposita. Cerci breves, recti, teretes. Operculum longissimum, segmenta abdominalia tria terminalia triplo superans, compressum, acuminatum.

Dispositio specierum.

1. Mesonotum et metanotum irregulariter graulosa.
 Statura major *longixipha*, sp. n.
 1'. Mesonotum in margine laterali dense granulosum,
 medio granulis raris obsitum. Metanotum læve.
 Statura minor *farinosa*, sp. n.

1. BURRIA LONGIXIPHA, sp. n. (Plate II. fig. 6.)

♀. *Mesonotum et metanotum irregulariter granulosa.*

	♀.
Long. corporis (operculo escluso)	104 mm.
„ mesonoti	20
„ metanoti cum segmento mediano ..	15
„ segmenti mediani	3
„ femorum anticorum	25
„ „ intermed.	21
„ „ posticorum	24
„ operculi	32

Patria. West Somaliland (1895). One female. Type in Hope Collection, Oxford.

2. BURRIA FARINOSA, sp. n.

♀. *Caput totum farinosum. Thorax vitta mediana longa farinosa ornatus, necnon apex abdominis farinosus. Mesonotum murginibus dense granulosus, medio in vitta farinosa raro granulosum.*

	♀.
Long. corporis (operculo escluso)	68 mm.
„ mesonoti	12
„ metanoti cum segmento mediano ..	11
„ segmenti mediani	2
„ femorum anticorum	19.5
„ „ intermed.	14.5
„ „ posticorum	18
„ operculi	26

Patria. West Somaliland, Bun Jijjiga (July 15, 1895). One female. Type in Hope Collection, Oxford.

LEPTYNIA sp.

West Somaliland, Bun Jijjiga (July 15, 1895). Five mutilated specimens.

ACRIDIODEA.

TRUXALIDÆ.

TRUXALIS NASUTA (L.).

North-west Somaliland, Whardi Datal, July 26, 1895. Three females.

TRUXALIS UNGUICULATA Ramb.

North-west Somaliland, Whardi Datal, July 26, 1895. Seven females, one male.

MACHÆRIDIA BILINEATA Stål.

North-west Somaliland, Whardi Datal, July 26, 1895. I refer a mutilated larva to this species.

EPACROMIA THALASSINA (Fabr.).

West Somaliland (1895). One example.

ŒDIPODIDÆ.**HUMBERTIELLA TENUICORNIS** (Schaum).

West Somaliland: Boholo Deno, near R. Shebeyli, June 24, 1895; three male specimens, one female. Somaliland (1895 or 1897); one male and one female.

This species is purely a native of tropical Africa.

GASTRIMARGUS VERTICALIS Sauss.

West Somaliland (1895). One male and one female specimen.

Var., *fusca*, *fascia fusca alarum vix perspicua*.

North-west Somaliland, Hargaisa, April 25-28, 1895. One female specimen.

ŒDALEUS INSTILLATUS, sp. n.

Pronotum haud valde elongatum, fusco-testaceum, indistincte fusconotatum. Tempora acuta, trigonalia. Statura minore. Gracilior. Frons subreclinata; costa frontalis latior, marginibus a vertice subdivergentibus; vertex ad frontem haud rotundatus. Pronoti crista humilis, acuta, sinuata, margine postico acutangulo. Elytra venis spuriiis completis, area ulnari irregulariter reticulata, fusco-testacea, dimidia basali fasciis 3 latis fuscis, 2 latis pallidis, opacis, dimidia apicali plus minus hyalina, maculis nebulosis infuscatiss ornata. Alæ basi flavicantes, fascia fusca lata semilunari, marginem posticum attingenti ornatae, ultra hanc hyalinæ, apice macula fusca, 2 lobos includenti ornata. Pronotum metazona quam prozona haud brevior. Femora postica testacea, extus punctulata, vel irregulariter fasciata. Tibiæ posticæ rufescentes. ♂ ♀.

	♂.	♀.
Long. corporis	20 mm.	29 mm.
„ pronoti	5	6
„ elytrorum	22	26.5
„ femorum posticorum . . .		15

Patria. West Somaliland (1895). Two specimens. Types, male and female, in Hope Collection, Oxford.

This new species falls into the second division of de Saussure's subgenus *Œdaleus sensu stricto*. It is a great deal smaller than

Æ. nigrofasciatus de G., and *Æ. infernalis* Sauss., and falls between *Æ. senegalensis* Kr. and *Æ. abruptus* Sauss. From both of these it differs in the acute angle of the posterior border of the pronotum, at least in the male (this angle is more obtuse in the female). I have drawn up the description on the model of de Saussure's synoptical table, in which he distinguishes these two species.

ACROTYLUS LONGIPES (Charp.).

Somaliland (1895 or 1897), one female. West Somaliland (1895), one male and two females.

These specimens are the red variety, the same as recorded by me from Sokotra (P. Z. S. 1898, p. 384).

PYRGOMORPHIDÆ.

CHROTOGONUS LUGUBRIS Blanch.

Somaliland (1895 or 1897). One male, two larvæ.

PHYMATEUS STOLLII Sauss.

North-west Somaliland, Whardi Datal, July 26, 1895. Two males and two females.

PH. MORBILLOSUS Serv. ?

North Central Somaliland: Haud, Odewein, June 23, 1897. Two larvæ. ("Dry river, thickly wooded banks."—C. V. A. P.)

I refer these larvæ with some hesitation to *P. morbillosus*.

PYRGOMORPHA GRYLLOIDES (Latr.).

North-west Somaliland: Whardi Datal, July 26, 1895. One female.

ACRIDIIDÆ.

SCHISTOCERCA PEREGRINA (Oliv.).

North-west Somaliland: Gooban District, between Hargaisa and Berbera, August 6, 1895. Six males, one female.

North Central Somaliland: Haud, Odewein, July 23, 1897. Four nymphs. ("Dry river, thickly wooded banks."—C. V. A. P.) Also five very young larvæ.

ACRIDIDIUM SUCCINCTUM Serv.

(nec Linn. = *ruficorne*, Serv. et Stål).

West Somaliland (1895). One male and one female.

SAURACRIS, gen. nov.

Corpus apterum, depressum, granulatum, nitidum. Oculi prominuli, a supero visi, subcontigui. Frons reclinata; antennæ filiformes. Pronotum deplanatum, carinis nullis, sulcis 3 instructum, margine postico subsinuato, lobis deflexis marginibus antico et postico obliquis, inferiore subrecto. Elytra minima,

rudimentaria vel nulla. Alæ nullæ. Abdomen segmentis 1^o et 2^o deplanatis, ceteris compressis, carinulatis. Pedes crassiusculi. Femora postica valde incrassata, haud serrulata; tibiæ posticæ margine externo 6-8, interno 8-9 spinis armatæ; tarsi postici segmentis 1^o et 3^o elongatis, 2^o parvo. Cerci ♂ breves, compressi, conici, apice obtusi. Lamina supraanalis ♂ obtusa, apice paullo bi-emarginata, medio plus minus sulcata. Lamina subgenitalis ♂ magna, fornicata; lamina subgenitalis ♀ simplex. Valvulæ ovipositoris breves, granulatæ. Corpus glabrum, partibus genitalibus ♂ ♀ tibiis posticis hirsutis.

This new genus falls into the group *Coptacrae*. The absence of elytra, wings, and of the carinæ of the pronotum separate it from *Cyphocerastes* Karsch, *Epistaurus* Bol., *Acridoderes* Bol.

SAURACRIS LACERTA, sp. n. (Plate II. fig. 3, ♂.)

Statura mediocri, testacea, nigro varia. Caput pallide testaceum; oculi globosi, badii. Pronotum pallide testaceum, fasciis 3 fuscioribus longitudinalibus ornatum. Elytra minutissima, granulati, lobiformia, segmenti abdominalis primi dimidium vix attingentia, vel nulla. Abdomen testaceum, vittis et maculis nigris ornatum. Pedes testacei; femora postica extus fusco vel utro ornata; tibiæ posticæ spinis extus 6-8, intus 9 armatæ. Abdomen subtus nigro variegatum. Femina mare major, fuscior. ♂ ♀.

	♂.	♀.
Long. corporis	25.5 mm.	39 mm.
„ pronoti ..	6	8
„ elytrorum (si adsunt) ..	1.75	1.75
„ femorum posticorum ..	13-13.5	17

Patria. North-west Somaliland, Hargaisa, April 25-28, 1895; 1 male, 1 female and 1 nymph. Central or East Somaliland (1897); 2 males. Female, type from Hargaisa, in Hope Collection, Oxford. Male type from Central or East Somaliland, in Hope Collection. Co-types at Oxford and in the collection of Malcolm Burr.

LOCUSTODEA.

PHANEROPTERIDÆ.

PERONURA sp. inc.

North-west Somaliland, Whardi Datal, July 26, 1895. One female nymph.

It is impossible accurately to determine this immature specimen.

PHANEROPTERA PUNCTULATA, sp. n.

Parva, læte viridis; pronoto, cruribus, abdomine nigro-punctulatis. Pronotum lobis deflexis æque altis ac longis; carinæ haud valde expressæ, flavidæ. Elytra breviora, venulis transversis haud prominulis, partē anali usque ad apicem nigro-punctulata. Alæ elytris longiores. Femora postica gracilia, apicem elytrorum

superantes, basi incrassata. Lamina supraanalis ♂ oblonga. Cerci ♂ longi, teretes, acuminati, apice mucronati. Lamina subgenitalis ♂ elongata, triangulariter emarginata, cercos haud superans. ♂.

	♂.
Long. pronoti	12·5 mm.
„ corporis	4
„ alarum	23·75
„ elytrorum	14·75
Lat. elytrorum medio	2·75
Long. femorum posticarum	16

Patria. North-west Somaliland, Whardi Datal, July 26, 1895. One male. Type in Hope Collection, Oxford.

This species comes nearest to *Ph. nana* Charp., but may be distinguished by the absence of the basal spots of the elytra, which also separates it from *Ph. quadripunctata* Br. The minute black dots all over the body resemble those of *Leptophyes punctatissima*, Bosc.

MILITITSA, gen. nov.

In tribum *Terpnistriarum* locandum. ♂ ignotus.

Fastigium verticis sulcatum et compressum. Frons brevis, perpendicularis. Oculi valde globosi. Pronotum selleforme, disco antice elevatum, obtusum, postice deplanato, margine ipso subelevato, rotundato, carinis lateralibus nullis; lobis deflexis altioribus quam longioribus, marginibus rotundatis. Elytra angusta, paullo ante medium latiora, dehinc attenuata, margine postico sinuato, apice oblique truncata; venæ 2 radiales subcontiguæ, apicem versus divergentes, ramis 1-3 venæ ulnaris conjunctis, ramo ultimo in marginem apicalem elytri ecurrente; vena ulnaris a vena radiali valde remota, in marginem posticum elytri deflexa, ramos nonnullos furcatos albo-circumdatus venam radialem versus emittens, quorum postremi ramis venæ radialis conjuncti; campus analis basi latus, dehinc angustissimus, venulis rectis transversis plurimis instructis, in tertia parte apicali elytri evanescens; campus marginalis latus, ad conjunctionem venæ radialis anterioris cum margine antico productus; intra marginem per totam longitudinem elytra anguste decolor, hyalinus. Alæ elytris longiores. Coxæ anticæ spina nulla instructæ. Femora omnia teretes, postica subtus spinulis 3 armata, lobis genicularibus acuminatis; tibiæ anticæ et intermedicæ compressæ, margine postico spinulis minimis armatæ. Tibiæ anticæ utrinque foramine aperto, oblongo, instructæ; tibiæ posticæ per totam longitudinem utrinque supra spinis albidis, apice rufescentibus, armatæ. Meso- et metasternum lobis obtusis instructa. Ovipositor satis magnus, sensim incurvis, apice obtusus, valvula superiore minime crenulato, valvulam inferiorem muticam superans. ♀.

This genus may be at once separated from *Terpnistria* Stål by the unspined pronotum and unlobed legs. The unarmed coxæ

and open tympana of the anterior tibiæ distinguish it from *Diogenia* Br.

MILITITSA SOMALIENSIS, sp. n. (Plate II. figs. 5 & 7.)

Corpus ferrugineum. Caput et pronotum viridia. Elytra viridia, venulis transversis hyalino-circumdatis, margine antico hyalino, margine postico sordide ferrugineo. Ovipositor nitidus, viridis, apice infuscatus. Cerci recti, conici. Lamina subgenitalis ♀ parva, apice angusta, truncata. ♀.

	♀.
Long. corporis	20·5 mm.
„ pronoti	4
„ elytrorum	27
„ femorum posticorum	17
„ ovipositoris	11

Patria. North-west Somaliland, Whardi Datal, July 26, 1895. One female specimen. Type in Hope Collection, Oxford.

TYLOPSIS PERPULCHRA, sp. n.

Viridis, elongata. Pronotum dorso deplanatum, viride, minutissime fusco-punctulatum, marginibus antico et postico subsinuatis, carinis lateralibus rectis, parallelis, albis, antice subtus atromarginatis; lobi deflexi angulato inserti, margine inferiore recto, angulo postico retroproducto, margine postico valde sinuato, antico perpendiculari. Elytra elongata, angusta, lanceolata, ramo primo vene radialis apice furcato, viridia, antice late albo-marginata, vitta pallide purpurea intra, apicem versus attenuata ornata. Alæ elytris valde longiores, venis radialibus mediis valde infuscatis. (Pedes antici et intermedii desunt.) Pedes postici gracillimi, longissimi, fusco-testacei. Cerci longi, validi, apice valde undulato-incurvi, apice decussati et infuscati. Lamina subgenitalis ♂ elongata, apice triangulariter excisa. ♂.

	♂
Long. corporis	20 mm.
„ pronoti	3·5
„ elytrorum	28
„ femorum posticorum	28

Patria. North-west Somaliland, Whardi Datal, July 26, 1895. One male specimen. Type in Hope Collection, Oxford.

This species agrees with *T. bilineolata* Serv. in the straight inferior borders of the side flaps of the pronotum, but may be distinguished by the variegated elytra.

OTIAPHYSA ANGUSTIPENNIS, sp. n. (Plate II. fig. 2.)

Flavo-ferruginea; elytra, alarum apices, virides; elytra venulis transversis albido-circumdatis, margine antico valde sinuato, margine postico recto, paullo ante medium latiora, pone medium valde angustata, apice oblique truncata. ♀.

	♀.
Long. corporis	26 mm.
„ pronoti	5
„ elytrorum	40
Lat. max. elytrorum ante medianum	9
„ „ prone medium	6
Long. ovipositoris	5·75

Patria. North-west Somaliland, Whardi Datal, July 26, 1895. One female specimen. Type in Hope Collection, Oxford.

This species differs from *O. hebetata* Karsch in its smaller size, narrowed elytra, and slightly longer ovipositor. In *O. hebetata* the elytra attain their greatest breadth (12 mm.) just before the apex; in this species, in the first half of the elytra.

RHEGMATOPODA PEELI, sp. n. (Plate II. fig. 1.)

Pallide virescens. Pronotum disco infuscato. Elytra translucida, longiora. Alæ elytris longiores. Pedes graciles; femora antica et intermedia subtus utrinque spinulosa; tibiae antice et intermedie triseriatim spinulosæ. (Femora postica desunt.) Elytra venæ radiales basi remotæ, dehinc appropinquantes, subcontiguæ, deinde divergentes, venâ postica rarum furcatum in apicem elytri emittens; venâ ulnaris sinuata; area unguis magis explicata; venulæ transversæ omnes rectæ, parallelæ; campus tympanalis valde prominulus. Lamina supraanalis ♂ brevis, rotundata. Cerci ♂ laminum subgenitulem multo breviores, acuminati, mucronati. Lamina subgenitalis ♂ elongata, deplanata, apice triangulariter emarginata, lobis obtusis. ♂. ♀ ignota.

	♂.
Long. corporis	19 mm.
„ pronoti	5·75
„ elytrorum	34

Patria. North-west Somaliland, Whardi Datal, July 26, 1895. One male specimen. Type in Hope Collection.

Tabula specierum generis Rhegmatopodæ.

1. Elytra campo marginali sensim angustato, tertia parte apicali evanescenti, venâ ulnari decurva; area ulnaris (pone venam ulnarem) sat lata. Pronotum lobis deflexis, margine postico vix sinuato, margine infero convexo. Femora antica 1. *leptocerca* Stål.
2. Elytra campo marginali latiori, apicem elytri attingenti; venâ ulnari sinuata, undulata, apice recurva, area ulnari latissima. Pronotum lobis deflexis, margine postico valde sinuato, margine infero obliquo. Femora antica et intermedia subtus spinulosa 2. *peeli*, n. sp.

EURYCORYPHA VARIA Brunner.

Patria. North-west Somaliland, Whardi Datal, July 26, 1895.
One female. Recorded from Kilimanjaro by Brunner.

CONOCEPHALIDÆ.

XIPHIDIUM SOMALI, sp. n.

X. natalensi Reelt. vicinum. *Fastigium verticis ab antico visum lateribus haud distincte divergentibus. Caput et pronotum flava, fasciis tribus, media lata, lateralibus angustis fuscis ornata; pronotum inerme, lobis deflexis obtuse triangularibus, marginibus obliquis, vix sinuatis, callo convexo nullo. Elytra abbreviata, lobiformia, pronoto breviora, testacea, margine antico infuscato. Alæ obliterate. Abdomen fusco-testaceum, utrinque flavido-bilineatum. Femora postica inermita, genibus inermitibus. Pedes testaceis. Ovipositor longissimus, rectissimus. Lamina subgenitalis ♀ apice truncata. ♀. ♂ ignotus.*

	♀.
Long. corporis.....	17·5 mm.
„ pronoti.....	3·5
„ elytrorum.....	3
„ ovipositoris.....	·8

Patria. North-west Somaliland, Whardi Datal, July 26, 1895.
One female specimen. Type in Hope Collection, Oxford.

This species differs from *X. natalense* Redt. in its unarmed knees and differently coloured head and pronotum. From *X. brevicercus* and *X. armaticeps* Karsch it may be distinguished by its unarmed head and pronotum.

HETRODIDÆ.

EUGASTER LORICATUS Gerst.

North Central Somaliland: Haud District, Eyk ("in open plain by thick bush"), July 2-4, 1897. One male and one female specimen.

SPALACOMIMUS TALPA (Gerst.).

North Central Somaliland: Haud District, Eyk, July 2-4, 1897. ("Open plain by thick bush."—C. V. A. P.) One male and one female specimen.

STENOPELMATIDÆ.

MAGRETTIA OBSCURA, sp. n.

Fusco-testacea, nitida. A M. abominata Br. differt femoribus tantum spinula minima unica apicem versus armatis, tibiis anticis inflatis. A M. mutica Br. differt femoribus spinula unica, neque 4-5 armatis, pronoto antice quam postice paullo latius. ♂.

	♂.	
Long. corporis.....	22	mm.
„ pronoti	5·5	
„ fem. post.	16·5	

Patria. North Central Somaliland: Haud District, Eyk ("on open plain by thick bush"), July 2-4, 1897. One male specimen. Type in Hope Collection, Oxford.

This species seems to be a link between *M. abominata* Br. (African), which has many-spined femora and compressed anterior tibiæ, and the pronotum slightly broader anteriorly than posteriorly, and *M. mutica* Br. (Asiatic), in which the femora have only 4-5 minute spines beneath, while the anterior tibiæ are sub-inflated and the pronotum is cylindrical.

GRYLLODEA.

GRYLLIDÆ.

LIOGRYLLUS BIMACULATUS (De Geer).

North-west Somaliland, Hargaisa, April 25-28, 1895. Four female specimens.

GRYLLUS sp.?

North-west Somaliland, Hargaisa, April 25-28, 1897. One female, one nymph. Both specimens are too mutilated for determination. The elytra are abbreviated, and the ovipositor is as long as the body. The general colour is dull black.

GRYLLUS MELANOCEPHALUS Serv.

North-west Somaliland, Hargaisa, April 25-28, 1895. One male specimen. Possibly only a dark variety of *G. domesticus*.

GRYLLUS LUGUBRIS Stål (= *G. afer* var.?).

North-west Somaliland, Hargaisa, April 25-28, 1895. One male specimen.

S. INSECTS OF OTHER ORDERS.

By various Contributors.

[Mr. Peel also brought several Hymenoptera and a few Hemiptera. The known species of the former have been kindly identified by Mr. W. F. Kirby, of the latter by Mr. W. L. Distant.

E. B. POULTON.]

HYMENOPTERA.

Terebrantia. *Entomophaga.*

BRACONIDÆ.

BRACON sp. A single specimen (1897).

*Aculeata.**Heterogyna.*

FORMICIDÆ.

PALTOTHYREUS PESTILENTIUS (Smith).

Three specimens from Bularli (West Somaliland), May 25, 1895.
Mr. Peel describes the species as excessively abundant at this locality.

Fossores.

MUTILLIDÆ.

MUTILLA ARENARIA (Fabr.).

A single female specimen (1897).

POMPILIDÆ.

SALIUS MEGAERA (Smith).

A single specimen from the Webbi Shebeyli, near Mount Kuldush, June 28, 1895.

LARRIDÆ.

LARRADA sp. allied to *L. diabolica* (Smith).

A single specimen from Sibi (West Somaliland), May 27, 1895.

Diptera.

EUMENIDÆ.

EUMENES LEPELLETIERI (Sauss.).

Seven specimens from Eyk, in the Haud District of North Central Somaliland, July 2-4, 1897. "Open plain by thick bush" (C. V. A. P.).

EUMENES DIMIDIATIPENNIS (Sauss.).

A single example from West Somaliland (1895).

RHYNCHIUM sp.

Two specimens from the Bun Feroli, north of the Webbi Shebeyli, June 10-20, 1895.

Anthophila.

APIDÆ

XYLOCOPA sp. near to *flavilabris*.

A single example (1897).

APIS LIGUSTICA (Spin.).

Eight specimens from the Haveea Country in East Central Somaliland, Sept. 8-27, 1897. (W. F. K.)

HEMIPTERA.

Two species of Rynchota Hemiptera were obtained by Mr. Peel.

ODONTOPUS SEXPUNCTATUS (Lap.).

One specimen from Bularli in West Somaliland, May 25, 1895; and others from the 1897 Expedition in Central and East Somaliland (no further locality).

Two specimens of another species in bad condition were also obtained in 1897. (W. L. D.)

9. CHILOPODA AND ARACHNIDA.

By R. I. Pocock.

The Arachnida collected by Mr. Peel proved on examination to be exceptionally interesting. Of the six species of Acari, two of the parasitic species of the genus *Rhipicephalus* seem to be well-marked new forms. One of them is represented by both males and undistended females; the other unfortunately by a single male, but this specimen differs so strikingly in colour from all the species of the genus recently recorded in Neumann's useful monograph of the group, that I have not hesitated to describe it as new. Mr. Peel was even more fortunate with his Scorpions. He collected only five specimens; but they represent four species, three of which have never been previously described. Two of these, *Buthus calviceps* and *Pandinus pugilator*, are exceptionally well-marked forms; while the third species, which I have dedicated to Mr. Peel, belongs to a section of the genus peculiar to Somaliland and hitherto represented by a single species.

The working out of this material has entailed a revision of the Scorpions of Somaliland, based upon those contained in the collection of the British Museum. The results have been incorporated in a supplement to the report upon Mr. Peel's collection, in the hope that sportsmen and naturalists who visit this country may see at a glance what is known of these animals and may be induced to follow, so far as collecting is concerned, the examples of Messrs. Lort Phillips, Donaldson Smith, and Peel.

Class CHILOPODA.

Family SCOLOPENDRIDÆ.

Two representatives of this family were obtained, April 25-28, 1895, at Hargaisa, North-west Somaliland, namely *Ethmostigmus trigonopoda*, a species which is distributed throughout tropical Africa, and a damaged example of a species of *Rhysida* probably referable to *R. paucidens*, Pocock¹, originally procured at Loga in the Arnec Galla country, but the absence of the anal legs makes the determination doubtful.

The specimens of these species are in the Hope Museum at Oxford.

¹ In Donaldson Smith's 'Through Unknown African Countries,' p. 404 (1897).

Class ARACHNIDA.

Order ACARI.

Family TROMBIDIIDÆ.

Genus TROMBIDIUM.

TROMBIDIUM TINCTORIUM (Linn.), Trouess.

Trombidium tinctorium, Trouessart, Ann. Soc. Ent. France, 1894, pp. 89-91 & 94, fig. *a*.

Loc. Hargaisa in North-west Somaliland (April 25-28, 1895).
Two specimens in the Hope Museum at Oxford.

Family ARGASIDÆ.

Genus ORNITHODOROS Koch.

ORNITHODOROS SAVIGNYI (Aud.).

Argas savignyi, Aud., Description de l'Égypte, Hist. Nat. i. pl. iv. fig. 5; Explanation of Plates, p. 183 (1827).

Ornithodoros savignyi, Neumaun, Mém. Soc. Zool. France, x. p. 26 (1897).

Loc. Bularli in West Somaliland (May 1895). Six specimens, two in the British Museum, the rest in the Hope Museum at Oxford.

Family IXODIDÆ.

Genus HYALOMMA C. Koch.

HYALOMMA GROSSUM C. Koch.

Hyalomma grossum, C. Koch, Arch. Natur. x. i. p. 220, no. 2, Uebersicht etc. iv. p. 34, pl. ii. fig. 8 (1847).

Loc. Bularli in West Somaliland (May 1895).

A single distended female, probably referable to this species; in the Hope Museum at Oxford.

Genus RHIPICEPHALUS C. Koch.

RHIPICEPHALUS SANGUINEUS (Latr.).

Ixodes sanguineus, Latreille, Hist. Nat. Crust. Ins. i. p. 157 (1804).

Rhipicephalus sanguineus (Latr.), Neumann, Mém. Soc. Zool. France, x. p. 385 (1897).

Loc. Bularli in West Somaliland (May 1895).

Three specimens, one in the British Museum and two in the Hope Museum at Oxford.

RHIPICEPHALUS MARMOREUS, sp. n. (Plate III. figs. 1-1 d.)

♂. *Colour*. Caputulum yellowish brown; dorsal surface of body yellowish white, with five large deep red-brown patches, one on each side extending backwards from the cervical groove, one on each side longitudinal and sending off towards the middle line a broad transverse bar, and a large posterior median patch with convex hinder border and anterior border produced forwards in the middle line, also a narrow brown band running round the margin of the dorsal scute; legs yellowish brown, with a broad longitudinal white band on the upperside of the femora, patellæ, and tibiæ; ventral surface of body whitish, with chitinous sclerites deep brown like the legs.

Posterior border of *capitulum* evenly concave, the angles moderately produced; lateral margins moderately, not strongly diverging, the anterior border only a little wider than the posterior.

Dorsal plate almost entirely covering the sides of the body, leaving merely a narrow marginal membranous rim; cervical grooves distinct, short; marginal groove represented by a series of coarse punctures; three posterior punctured grooves on the posterior dark patch; for the rest the dorsal plate is without grooves but is pitted with coarse scattered punctures; the posterior rim divided by short sulci into eleven festoons. Ventral area with a single long piriform adanal plate, which is narrowed in front and extends backwards almost to the posterior coxæ; its external border slightly convex, internal border concave in the middle, convex in the anterior and posterior third, posterior border oblique and ending internally in a rounded rectangular prominence; a single small median sclerite on the postanal membranous area. *Coxæ* of anterior legs produced into two strong spiniform processes; of 2nd to 4th with a single distal spiniform process on the posterior side.¹

Total length of dorsal plate 3·8 mm.

Loc. Bularli in West Somaliland (May 1895).

A single specimen (♂ type) in British Museum.

RHIPICEPHALUS ARMATUS, sp. n. (Plate III. figs. 2-2 f.)

♂. *Colour* a tolerably uniform deep brown, with black markings on the grooves of the dorsal plate; legs deep brown; ventral area pale.

Capitulum with posterior border straight in the middle, its angles more abruptly spiniform than in *R. marmoreus*, its lateral margins more obliquely diverging in their posterior two-thirds, then abruptly converging. *Dorsal scute* not quite covering the lateral area, with normal cervical grooves; marginal groove deep, strongly pitted, extending from a point on a level with the cervical groove to the beginning of the festoons of the posterior border; posteriorly there is a pair of deep pitted grooves, and between

¹ Owing to the dried state of the specimen, satisfactory examination of the mandibular armature was impossible.

them and the marginal groove on each side another similar but curved groove which extends from in front of the middle of the dorsal area back as far as the posterior end of the marginal groove; in addition to the punctures in the grooves there are a few coarse punctures scattered here and there; posterior border with eleven festoons. *Adanal plates* narrowed in front, but not extending far forwards beyond the anus; their inner border nearly straight, external border convex; posterior border produced into a short external and a long spiniform internal tooth, which projects nearly as far back as the posterior border of the dorsal plate, the apex of this spine is obliquely truncate and subbifid, above it is a second strong spine; a pair of postanal sclerites. *Coxæ* of 1st leg strongly bidentate; of 2nd to 4th also bidentate, the two teeth being on the posterior border, one proximal, the other distal and thinner. Total length 4.8 mm.

Two undistended female specimens, probably referable to this species, have the cephalic plate about as wide as long, reddish in the middle, blackish at the sides, the cervical grooves deep, a row of large punctures representing the marginal grooves on each side, some large punctures along the lateral edge in front of the eye, a few between the cervical grooves, and a few large ones and many smaller ones on the middle of the posterior area. The *abdomen* is impressed posteriorly with three shallow grooves and is obsoletely festooned. *Coxæ* of the legs posteriorly weakly bispinate, the external spine being the larger.

Loc. Bularli in West Somaliland (May 1895).

Six specimens. Type (male) and two co-types (male and female) in the British Museum. Three co-types (2 males and 1 female) in the Hope Museum at Oxford.

The males of the three species of this genus obtained by Mr. Peel may be determined as follows:—

- (♂) *a.* Dorsal plate marked behind with a pair of moderately long grooves, one on each side of the middle line; between these and the deep marginal groove there is a third long and deep groove extending from the second or third sulcus of the festooned border past the middle of the dorsal plate; adanal plate produced behind into a long and strong spiniform process, immediately above which there is a second strong spine; a pair of chitinous postanal sclerites *armatus.*
- b.* Dorsal plate with a longish posterior median sulcus and a pair of shallower impressions, one on each side of it, with only a very short shallow and inconspicuous groove between the marginal groove and the middle line; adanal plate not produced behind into a long spiniform process; no spine above the termination of this plate.
- a'.* Dorsal plate yellowish white, with large symmetrically disposed reddish-brown patches; legs brown, painted with white above; dorsal plate sparsely punctured; marginal groove represented by a series of punctures. *marmoreus.*
- b'.* Dorsal plate deep brown with blacker patches and yellow lateral margin; legs uniformly brown; dorsal plate closely and irregularly punctured; marginal groove distinct *sanguineus.*

Order ARANEÆ.

Unfortunately the few Spiders obtained by Mr. Peel were not all preserved in such a manner as to make their specific determination possible, being dried, pinned, and for the most part very much shrivelled. The following forms, however, are recognizable.

1. *ARANEUS HOPLOPHALLUS* Poc. (Bull. Liverpool Museum, ii. p. 40, 1899.)

An adult male certainly belonging to this species and a female doubtfully referred to it, the former from Berbera in North-west Somaliland, the latter from East Central Somaliland (1897). The type was procured in Sokotra and is preserved in the British Museum; the specimens procured by Mr. Peel are in the Hope Museum.

2. *ARANEUS NAUTICUS* L. Koch.

A single female, most likely of this species, from Berbera, in the Hope Museum.

3. *CEBRENNUS ÆTHIOPIUS* Simon.

A single immature female, probably referable to the Abyssinian species, was taken in Eastern Central Somaliland. In the Hope Museum.

4 & 5. *OXYOPES* sp.?

Two specimens from Western Somaliland, each representing an indeterminable species. In the Hope Museum.

Order SCORPIONES.

Family SCORPIONIDÆ.

Genus *PANDINUS* Thorell.

PANDINUS PUGILATOR, sp. n. (Plate IV. figs. 1, 1 a.)

Colour of chelæ, tail, and upperside of body olive-brown, the hands rather paler; legs and vesicle of tail clear pale yellow.

Carapace smooth, sparsely punctured above, granular at the sides, its length exceeding that of the movable digit and almost equalling that of the 3rd and 4th tail-segments.

Tergal plates granular laterally; the last more or less granular throughout. *Sternal plates* smooth, the last weakly crested.

Tail short and slender, less than three times the length of the carapace, considerably narrowed posteriorly; the 4th segment about twice as long as wide, the 5th considerably more than twice as long as wide; 1st segment weakly granular above, for the rest smooth, all its keels smooth; 2nd segment entirely smooth, 3rd with the four inferior keels strong, rugose, the intervening spaces granular; 4th with the infero-lateral keels strong and denticulated,

the inferior median keels not differentiated amongst the coarse granules covering the lower surface of the segment; 5th segment with the inferior keels denticulated, the area between them coarsely granular; upperside of the 3rd, 4th, and 5th segments smooth, the keels also smooth or at all events only roughened with pores; vesicle granular, narrow, its width equal to its height and only about one-third the length of the vesicle and aculeus.

Chelæ: humerus coarsely granular above, its anterior surface with strongly granular crests; lower surface granularly crested behind; brachium finely granular in front, also roughened with pores and granules behind; hand wide, its width about equal to the length of the movable digit, its upper surface smooth posteriorly on the lobe, the area just above external keel coarsely granular, the rest covered with low more or less anastomosing tubercles, which are, however, more distinct towards the base of the immovable digit: the inner edge smooth, though the granules of the lower surface run right up to it or even project slightly beyond it: the lower surface sparsely granular, with two weakly defined keels; keel defining the hand-back above very strong and prominent.

Legs smooth; protarsal segment of 1st and 2nd with a single external apical spine; tarsi armed with eight spines, two on each side being on the lobe, one on its lower angle, the other in the middle as in *P. colei*, *P. bellicosus*, &c.

Pectinal teeth 17.

Measurements in millimetres. Total length 93; length of carapace 18, of tail 48; width of 1st segment 5·8, of 4th 3·5, of vesicle 3·2; width of hand 16, length of movable digit 17.

Loc. North-west Somaliland (Berbera or Hargaisa). A single specimen (type) in the British Museum.

Recognizable by the granulation of the lower side of the 4th caudal segment and the obsolescence of its inferior median crests, &c.

PANDINUS PEELI, sp. n. (Plate IV. fig. 2.)

♂. Closely allied to *P. colei* (Pocock), but differing in the characters pointed out in the table given below (*cf.* p. 62).

Carapace quite smooth above, sparsely punctured, much less closely granular laterally than in *P. colei*. *Terga* weakly granular at the sides only, not closely granular throughout the posterior half as in *P. colei*. *Chelæ* larger than in *P. colei*; upper crest of brachium smooth; upperside of hand externally granular as in *P. colei*, but internally much smoother, the granules anastomosing and running together into ridges which become almost obsolete on the posterior lobe of the hand. Fourth abdominal *sternum* obsoletely granular in the middle. *Pectinal teeth* 15.

Measurements in millimetres. Total length 81; length of carapace 14·5, of tail 38, of underhand 10; width of hand 13·5.

Loc. North-west Somaliland (Berbera or Hargaisa). A single specimen (type) in the British Museum.

Family BUTHIDÆ.

Genus UROPLECTES Peters.

UROPLECTES FISCHERI (Karsch).

Lepreus fischeri Karsch, Mitth. Münch. ent. Ver. 1879, p. 124.

The two specimens of this species that were obtained in North-west Somaliland (at Berbera or Hargaisa) agree closely in characters with those collected by Dr. Donaldson Smith at Luumo and Turfa, and discussed on pp. 400-401 of that author's account of his expedition. One of Mr. Peel's specimens is in the British Museum, the other in the Hope Museum at Oxford.

Genus BUTHUS Leach.

BUTHUS CALVICEPS, sp. n. (Plate IV. figs. 3-3 a.)

Colour (dry specimen): trunk blackish yellow; appendages uniform pale yellow.

Carapace weakly granular; keels almost entirely obsolete, only the anterior median distinct but failing to attain the front border of the carapace. *Tergal plates* rather coarsely granular: keels normal and granular. *Sternal plates* smooth and polished; the last very finely granular at the sides, polished and rather coarsely but sparsely punctured in the middle; the lateral keels almost obsolete, represented by about three larger granules.

Tail of medium thickness, nearly five times the length of the carapace, posteriorly narrowed; the sides and upper surface of the segments normally crested, the intercarinal spaces finely granular; the median lateral keel complete on the 2nd and almost complete on the 3rd segment; lower surface of 1st, 2nd, and 3rd segments rather coarsely but strongly punctured with setiferous pores; the median keels of the 1st obsolete, those of the 2nd and 3rd strong and denticulated, increasing in strength posteriorly, the inferior laterals of these segments also strong and denticulated, converging posteriorly and fusing, like the medians, with a transverse granular crest; lower surface of the 4th weakly granular, without median keels; 5th segment without a trace of superior lateral keels, finely granular below, with a few coarser granules intermixed, the median keel denticulated; the laterals strongly denticulated, with at least one large lobate tooth behind the middle of their length, ending behind in a big subdivided lobe on each side of the anal aperture; *vesicle* of medium size, smooth, punctured.

Chelæ weak; humerus granular above, normally crested; brachium smooth, weakly crested, anterior surface with two weakly granular keels; hand smooth, small, narrower than brachium, movable digit with eight rows of teeth along the middle line, the basal row long and rising right at the extremity of the segment, the lateral teeth forming short oblique rows of three each, two

outer and one inner ; finger a little more than twice the length of the underhand.

Legs with granularly crested femora ; the feet with two rows of hairs below.

Pectinal teeth 21.

Genital operculum considerably longer than sternum.

Measurements in millimetres. Total length 31 ; length of carapace 3·5, of tail 17·5 ; length of movable digit 3.

Loc. North-west Somaliland (Berbera or Hargaisa). A single specimen (type) in the British Museum.

In size and some points of structure this little *Buthus* approaches *Nanobuthus andersoni* Poc., obtained at Duroor to the north of Suakim (Journ. Linn. Soc., Zool. xxv. p. 314). The dentition of the mandible and of the digits of the chelæ, however, is quite normal for the genus *Buthus*. The most striking structural peculiarities of the species are : (1) the obsolescence of all the cephalothoracic keels with the exception of the anterior median ; (2) the coarse but sparse punctuation of the last sternite and of the lower side of the first caudal segment, accompanied as it is by the disappearance of the median keels ; (3) the disappearance of the median keels on the lower side of the 4th caudal segment. These characters do not co-exist in any species known to me. Judging from the structure of the inferior lateral keels of the 5th caudal segment and of the inferior keels of the 2nd and 3rd segments, this species belongs to the same category as *B. occitanus*.

10. GENERAL LIST OF THE SCORPIONS OF SOMALILAND AND THE BORAN COUNTRY. By R. I. POCKOCK.

Family BUTHIDÆ.

Genus UROPLECTES Peters.

UROPLECTES FISCHERI (Karsch).

Lepreus fischeri, Karsch, Mitth. Münch. ent. Ver. iii. p. 124 (1879).

Loc. Barawa (*Karsch*), Turfa and Lummo (*Donaldson Smith*), and Berbera and Hargaisa (*C. V. A. Peel*).

To the south of Somaliland the typical form of this species is replaced by two subspecies, one paler, the other darker than *U. fischeri typicus*. The three may be contrasted as follows :—

- | | |
|---|--------------------------------------|
| a. Hands entirely pale, body banded above as in <i>fischeri typicus</i> | <i>f. flavimanus</i> , subsp. [nov.] |
| b. Hands wholly black or at least lined with black and black at base of fingers. | |
| a'. Terga yellow, with a pair of black spots ; carapace and terga broadly yellow at the side ... | <i>f. typicus</i> . |
| b'. Terga mostly black, with a narrow median and lateral marginal band, much less yellow at side of carapace..... | <i>f. nigrimanus</i> . |

The subspecies *nigrimanus* was based upon a single example from Mombasa (see Proc. Zool. Soc. 1890, p. 130, pl. xiv. fig. 2). *U. flavimanus* is based upon a specimen in the British Museum obtained by Mr. J. Wilson at Mombasa in British East Africa.

It is interesting to note that the two subspecies most distinct from each other, namely, *U. f. flavimanus* and *U. f. nigrimanus*, occur in the same locality, whereas the subspecies intermediate between them is found elsewhere.

Genus PARABUTHUS Pocock.

PARABUTHUS GRANIMANUS Pocock.

Parabuthus granimanus, Pocock, Journ. Linn. Soc., Zool. xxv. p. 311 (1895).

Loc. Zeyla in North-west Somaliland (*E. W. Oates*), Goolis Mountains (*Lort Phillips*). In the British Museum.

PARABUTHUS HETERURUS Pocock.

Parabuthus heterurus, Pocock, in Donaldson Smith's 'Through Unknown African Countries,' p. 402 (1897).

Loc. Hargaisa, Silul, Shebeli River (*A. Donaldson Smith*); Goolis Mountains (*E. Lort Phillips*). In British Museum.

The two species of this genus may be recognized as follows:—

- | | |
|--|------------------------|
| a. Hand and brachium closely granular; 5th segment of tail strongly infuscate at least below | <i>P. granimanus</i> . |
| b. Hand and brachium smooth, punctured, hairy; 5th caudal segment clear yellow throughout, 4th segment and vesicle black | <i>P. heterurus</i> . |

Genus BUTHUS Leach.

BUTHUS OCCITANUS (Amoreux), subsp. nov. BERBERENSIS.

Colour yellow, with black lines along the keels of the upperside of the trunk, humerus, brachium, and hand, also the distal half of the femora infuscate and the base and keels on the patellæ. *Body* and *tail* crested and granular as in the typical form, the granules of the inferior keels of the 2nd and 3rd caudal segments about as much enlarged as in the Spanish form; external surface of hand with a few granules, a pair of strong granular finger-keels running along its upperside and inner edge.

Total length 38 mm.

Somaliland (*Miss Gillett*). In British Museum.

Subsp. nov. ZEYLENSIS.

Colour a uniform reddish yellow, the appendages and tail clearer than the trunk. Frontal intercarinal area of *carapace* covered with granules; a median row of granules running along

the middle of the ocular tubercle. *Terga* closely and finely granular throughout. Inferior keels of 2nd and 3rd *caudal segments* strongly dentate. *Hand* smooth, with a pair of weak and weakly granulate crests on its upperside.

Total length 50 mm.

Loc. Zeyla in North-west Somaliland (*E. W. Oates*). In British Museum.

BUTHUS CALVICEPS Poc.

Cf. supra, p. 54.

BUTHUS ACUTECARINATUS Simon.

Buthus acutecarinatus, Simon, Ann. Mus. Genova, xviii. p. 245, pl. viii. fig. 18 (1883).

Loc. Zeyla (*E. W. Oates*). In British Museum.

Occurs also in Egypt and Arabia.

BUTHUS POLYSTICTUS Poc.

Buthus polystictus Pocock, Ann. Mag. Nat. Hist. (6) xviii. p. 178, pl. xi. fig. 1 (1896).

Goolis Mountains in Somaliland (*E. Lort Phillips*). In British Museum.

BUTHUS EMINI Pocock.

Buthus eminii, Pocock, Ann. Mag. Nat. Hist. (6) vi. p. 98 pl. i. fig. 2 (1890); *id.* op. cit. (6) xviii. p. 179 (1896).

Loc. Aimœa in the Boran Country, 3000 ft. (*A. Donaldson Smith*). In British Museum.

This species and perhaps also *B. polystictus* may prove to be subspecies of *B. trilineatus* Peters, described from Tete.

The species and subspecies of *Buthus* mentioned above may be diagnosed as follows:—

- a. Inferior lateral keels of 5th caudal segment posteriorly lobate; inferior median keels of 2nd and 3rd with the granules enlarged towards the posterior end.
 - a¹. Carapace without distinct median, lateral, and posterior keels, inferior keels on 4th caudal segment obsolete *calviceps*.
 - b¹. Carapace with distinct median posterior and lateral keels, the posteriors turning outwards and uniting with the laterals, inferior keels on 4th caudal segment developed *occitanus*.
 - a². Legs, chelæ, and body uniformly yellow, not lined with black; intercarinal ocular area closely granular subsp. *zeylensis*.
 - b². Chelæ and body with black-lined keels, femora of legs distally infusate; patellæ also infusate basally and along keels; frontal area of carapace sparsely granular in the middle subsp. *berberensis*.

- b. Inferior lateral keels of 5th caudal segment and inferior median of segments 2 and 3 uniformly granular throughout.
- a³. Hand carinate and densely granular; dorsal abdominal keels posteriorly strongly spiniform..... *acuteccarinatus*.
- b³. Hand smooth, not carinate; dorsal abdominal keels not strongly spiniform posteriorly.
- a⁴. Less coarsely granular; tail thinner and lower, height of 4th segment barely half its own length and distinctly less than length of 1st; upper surface of caudal segments much less strongly excavated, &c. *polystictus*.
- b⁴. More coarsely granular; tail thicker, its superior keels more strongly elevated; height of 4th segment more than half its length and equal to length of 1st *emini*.

Family SCORPIONIDÆ.

Genus PANDINUS Thorell.

PANDINUS MEIDENSIS Karsch.

Pandinus meidensis, Karsch, Mitth. Münch. ent. Ver. iii. p. 127 (1879); Kraepelin, Das Tierr., Scorpiones, &c. p. 119 (1899).

Loc. Meid in Somaliland. In Berlin Museum.

PANDINUS SMITHI (Pocock).

Scorpio smithi, Pocock in Donaldson Smith's 'Through Unknown African Countries,' p. 198 (1897).

Loc. Hargaisa, Silul, Abdeh, and Turfa in Somaliland (*A. Donaldson Smith*). In British Museum.

PANDINUS PALLIDUS (Kraepelin).

Scorpio pallidus, Kraepelin, Mitt. Mus. Hamburg, xi. p. 60 (1894).

Pandinus pallidus, id. Das Tierr., Scorpiones, &c. p. 120 (1899).

Loc. Barawa in Somaliland. In Hamburg Museum and British Museum.

The typical form of this species was based upon immature individuals measuring only up to 75 mm. long. Until the adult is known it seems to me impossible to classify the species with certainty. It is undoubtedly nearly allied both to the following species, *P. phillipsi* from North-west Somaliland, and to the more southern Masailand form *P. gregorii*, but it will probably prove to be at all events subspecifically different from both.

PANDINUS PHILLIPSI (Pocock).

Scorpio phillipsi, Pocock, Ann. Mag. Nat. Hist. (6) xviii. p. 101 (1896).

Pandinus phillipsi, Kraepelin, Das Tierr., Scorpiones, &c. p. 120 (1899).

Loc. Dooloob and the Goolis Mountains, inland of Berbera (*E. Lort Phillips*). In British Museum.

This form is evidently allied to the typical *P. pallidus*; but until adults of the latter come to hand for comparison, it is impossible to say what the exact relationship between the two may be. The original examples of *P. phillipsi* are a pair of females obtained at Dooloob. Mr. Lort Phillips subsequently procured an adult male and a young female on the Goolis Range of mountains. The former has 17-18 pectinal teeth, a longer tail and larger vesicle than the female, and lobate movable finger on the chela. The young one is as large as a co-type of *P. pallidus*, the carapace in the two measuring 11 mm. Moreover the posterior tarsal lobe is tipped above with bristles as in *P. pallidus*, not with a spine as in the adult *P. phillipsi*. But the shape of the hand in the young *P. phillipsi* is different, this organ being very noticeably narrower, and the tubercles on its upperside are much sharper and more strongly defined.

The following actual measurements (in millim.) of the two examples may be advantageously compared:—

	Total length (without vesicle).	Carapace.	Length of brachium.	Length of underhand.	Length of movable finger.	Width of hand.
Young of <i>P. pallidus</i> . }	71	11	7.5	7	11	10
Young of <i>P. phillipsi</i> . }	68	11	7.5	7	11	8.5

As will be seen, there is practical identity of measurements¹ except where the width of the hand is concerned.

PANDINUS COLEI (Pocock).

Scorpio colei, Pocock, Ann. Mag. Nat. Hist. (6) xviii. p. 180, pl. xi. figs. 2, 2 a (1896).

Pandinus colei, Kraepelin, Das Tierr., Scorpiones, &c. p. 120 (1899).

Loc. Berbera and Goolis Mountains (*E. Lort Phillips*). In British Museum.

This species was based upon a subadult specimen from Berbera.

Mr. Lort Phillips subsequently procured in the Goolis Mountains and kindly sent to the British Museum three additional examples, an adult male and female and a young specimen considerably smaller than the type. The characters upon which the species was based prove perfectly constant. The adult male and female are much alike; the former, however, has the terga of the abdomen finely and closely granular posteriorly, whereas in the female they are nearly

¹ The difference in total length in this and in many other cases is due to the degree of distension of the abdominal region. The length of this region is so very liable to alteration in accordance with the mode of preservation of the specimen after death, and depends so largely upon the fasting or full-fed, pregnant or not pregnant condition of the Scorpion, that the relative lengths of the tail as compared with the trunk, which Kraepelin, Karsch, and others so frequently quote, have but little importance. The length of the carapace, which does not vary, should be taken as standard for comparison.

smooth. Again, the 2nd and 4th abdominal sterna are finely granular in the middle; and, lastly, the vesicle is more strongly inflated, its width considerably exceeding its height and being equal to that of the 4th caudal segment.

In the female the width of the vesicle is scarcely greater than its height and less than the width of the 5th segment.

Pectinal teeth 11-13 (♂ ♀).

Total length (♂) 82 mm., carapace 13.5, tail 38, underhand 8.5, width of hand 12.

PANDINUS PEELI Pocock.

Cf. supra, p. 53.

PANDINUS HAWKERI, sp. n.

Colour of carapace and palpi yellowish brown; tergal plates and tail reddish brown; vesicle brown with yellow lines; legs entirely pale yellow, abdominal sterna testaceous.

Carapace smooth, polished; terga also smooth, punctured along the posterior margin, the last very weakly granular laterally, the crests obsolete. *Sterna*, with exception of the last, smooth; the last obsoletely crested, but mesially closely granular.

Tail short, only a little more than two and a half times the length of the carapace, which is almost as long as its first three segments; the inferior median keels absent on segments 1-5, the inferior laterals present, smooth on segments 1 and 2, granular on 3 to 5, the area of the lower surface of the tail between them granular as in *P. colei*; superior and superior-lateral keels of tail weak, punctured, but not granular; sides of tail smooth; upper surface at most very sparsely granular, except along the posterior edge of segments 1-4, where there is a series of denticuliform granules; *vesicle* strongly punctured and setose beneath, but scarcely granular, its width exceeding its height. *Chelæ*: humerus smooth below and behind, the crests on its upper and anterior surfaces coarsely granular, its upperside sparsely granular in the basal half; brachium smooth, except for some minute granules in front and some coarser ones along the anterior inferior crest: hand moderately wide, its width equal to three-fourths the length of the carapace; upper surface granular on the external slope above the strong keel of the underhand; the rest of the upper surface nearly smooth and polished, beset with a fine reticulation of ridges which are almost obsolete in adult, coarser in young; inner edge almost smooth, punctured, lower surface sparsely and weakly granular towards the base of immovable digit; immovable digit with its basal width less than half the length of its biting-edge; movable digit shorter than carapace, exceeding width of hand, equal to length of 3rd and 4th caudal segments.

Legs smooth; protarsi of 1st and 2nd with one posterior apical spine; tarsal lobes with two spines; lower surface of tarsi with one anterior and three posterior spines; anterior claw much

weaker than posterior. *Sternum* long, about one-third longer than wide.

Pectinal teeth 12-15 in ♀.

Measurements in millimetres. Total length 81, carapace 15, tail 50; width of hand 12; length of movable digit 13, of hand-back 8.

Loc. Jifa Uri inland from Zeyla (*R. M. Hawker*). In British Museum.

Differing from *P. colei* and *P. peeli* in the characters pointed out below (p. 62).

PANDINUS PUGILATOR Poc.

Cf. supra, p. 52.

PANDINUS MILITARIS, sp. n.

Scorpio bellicosus, L. Koch; Pocock, in Donaldson Smith's 'Through Unknown African Countries,' p. 397 (1897) (nec *P. bellicosus* L. Koch).

♀. *Colour* yellowish brown; legs paler yellow, hand reddish brown with black fingers. *Carapace* granular laterally, entirely smooth above except for a few granules in the anteocular groove. *Terga* finely granular laterally. *Tail* a little more than two and a half times as long as the carapace, the inferior keels on segments 1-3 quite smooth, those on 4th at most slightly rugose; superior and superior-lateral keels of all the segments granular or weakly denticulated; superior surface of 1st granular, of 2nd less so; width of 1st exceeding length of 3rd, almost equal to that of 4th; 5th about twice as long as wide. *Chelæ*: *humerus* granular above at least on its basal half, smooth below; *brachium* almost entirely smooth, its anterior side weakly granular above, more coarsely below; *hand* wide, its width in adult exceeding length of 3rd and 4th caudal segments, inner edge smooth, upper surface smooth, finely reticulated, a few low tubercles just above the keel of the underhand and at the base of the immovable digit; external portion of upper surface rising vertically above keel of underhand; thickness of hand at the front equal to length of 4th caudal segment. Lower side of hand granular distally, scarcely crested.

Pectinal teeth 12-15.

Measurements in millimetres (of type). Total length 112, carapace 19, tail 51; width of hand 16·8, underhand 10·5.

Loc. Aimola in the Boran Country (*Donaldson Smith*); also Ndi, on the Weiss Road inland from Mombasa (*C. Stuart Betton*). In British Museum.

Nearly allied to the East-African species *P. cavimanus*, but differing in the following characters:—the carapace in the female is longer than the 4th and 5th caudal segments, and the basal width of the immovable finger is only about half the length of its free margin; whereas in *P. cavimanus* (♀) the carapace is shorter than 4th and 5th caudal segments, and the basal width of the immovable digit is about two-thirds the length of its free margin.

I at one time supposed this species to be the female of the Abyssinian *P. bellicosus* L. Koch, but judging by Kraepelin's recent diagnosis of the latter species (*Das Tierr.*, *Scorpiones*, p. 121, 1899), *P. militaris* certainly differs in having the superior caudal keels denticulated, the hand finely punctulate above and below, and the last abdominal sternite scarcely visibly crested.

Synopsis of the Somali Species of Pandinus.

- a.* Median eyes always some distance behind middle of carapace; tarsi more numerous spined, the lobes with 3-4 spines, total number on lower side of tarsi 9 behind, 6 in front.
 - a*¹. Tarsal lobes with 4 spines, a strong spine being on the tip of the lobe; humerus of chela furnished below with two short rows of denticles..... *meidensis.*
 - b*¹. Tarsal lobe with 3 strong spines, the spine on the tip smaller and usually filiform distally; humerus of chela smooth below.
 - a*². Ornamentation of hand consisting of conical tubercles; inner margin of hand distinctly tubercular and denticulate from base of finger to carpal articulation, width of hand greater than length of carapace; pectinal teeth 18-21 *smithi.*
 - b*². Ornamentation of hand consisting of low rounded or irregular shaped, often anastomosing tubercles; lobe of hand with smooth posterior edge; length of carapace exceeding width of hand; pectinal teeth 15-18 *philipsi.*
- b.* Median eyes in middle of carapace, rarely a little behind the middle; total number of spines on tarsi 5 behind, 3 in front, 2 only being situated on each lobe, the tip of which is furnished with bristles.
 - a*³. Lower surface of all the caudal segments and the middle of at least the last abdominal sternite closely granular and not keeled.
 - a*⁴. Upper surface of hand from inner edge to crest of underhand uniformly covered with coarse granules which do not anastomose; upper crest of brachium distinctly granular..... *colei.*
 - b*⁴. Upperside of hand coarsely granular only above crest of underhand, the rest of its upperside either almost smooth or ornamented with low rounded tubercles which run into ridges; upper crest of brachium quite smooth.
 - a*⁵. Upperside of hand covered with ornamentation of low, more or less anastomosing tubercles; its lower surface distinctly granular; hand larger, carapace equal to length of underhand + one-third of movable digit, and only as long as the hand from the posterior edge of the lobe to the base of the immovable finger; immovable finger not twice as long as its basal width *peeli.*
 - b*⁵. Upperside of hand smooth, at most ornamented with a network of low ridges, lower side very sparsely granular; hand smaller, carapace as long as underhand + half the movable finger, and as the hand measured from the posterior edge of the lobe + half the immovable finger; immovable finger twice as long as its basal width. *hawkeri.*

